

cloudera[®]

Cloudera Enterprise 6 Release Guide

Important Notice

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Cloudera Enterprise 6 Release Guide

This guide contains release and download information for installers and administrators. It includes release notes as well as information about installation requirements, supported platforms, and version and download information. The guide also provides a release matrix that shows which major and minor release version of a product is supported with which release version of Cloudera Manager and CDH.

Cloudera Enterprise 6 Requirements and Supported Versions

In an enterprise data hub, Cloudera Manager and CDH interact with several products such as Apache Accumulo, Apache Impala, Hue, Cloudera Search, and Cloudera Navigator. This guide provides information about which major and minor release version of a product is supported with which release version of CDH and Cloudera Manager.

Compatibility across different release versions of Cloudera Manager and CDH must be taken into account, especially when carrying out install/upgrade procedures.

Hardware Requirements

To assess the hardware and resource allocations for your cluster, you need to analyze the types of workloads you want to run on your cluster, and the CDH components you will be using to run these workloads. You should also consider the size of data to be stored and processed, the frequency of workloads, the number of concurrent jobs that need to run, and the speed required for your applications.

As you create the architecture of your cluster, you will need to allocate Cloudera Manager and CDH roles among the hosts in the cluster to maximize your use of resources. Cloudera provides some guidelines about how to assign roles to cluster hosts. See [Recommended Cluster Hosts and Role Distribution](#). When multiple roles are assigned to hosts, add together the total resource requirements (memory, CPUs, disk) for each role on a host to determine the required hardware.

For more information about sizing for a particular component, see the following minimum requirements:

Cloudera Manager

Cloudera Manager Server Storage Requirements

| Component | Storage | Notes |
|----------------------------------|---------------|---|
| Partition hosting /usr | 1 GB | |
| Partition hosting /var | 5 GB to 1 TB | Scales according to number of nodes managed. See table below. |
| Partition hosting /opt | 15 GB minimum | Usage grows as the number of parcels downloaded increases. |
| Cloudera Manager Database Server | 5 GB | If the Cloudera Manager Database is shared with the Service Monitor and Host Monitor, more storage space is required to meet the requirements for those components. |

Host Based Cloudera Manager Server Requirements

| Number of Cluster Hosts | Database Host Configuration | Heap Size | Logical Processors | Cloudera Manager Server /var Directory |
|--------------------------|-----------------------------|-----------|--------------------|--|
| Very small (≤ 10) | Shared | 2 GB | 4 | 5 GB |
| Small (≤ 20) | Shared | 4 GB | 6 | 20 GB minimum |

| Number of Cluster Hosts | Database Host Configuration | Heap Size | Logical Processors | Cloudera Manager Server /var Directory |
|-------------------------|-----------------------------|-----------|--------------------|--|
| Medium (≤200) | Dedicated | 8 GB | 6 | 200 GB minimum |
| Large (≤500) | Dedicated | 10 GB | 8 | 500 GB minimum |
| Extra Large (>500) | Dedicated | 16 GB | 16 | 1 TB minimum |



Note: On smaller clusters, the Cloudera Manager Server and Database can share a host. On larger clusters, they must run on separate dedicated hosts.

Service Monitor Requirements

Service Monitor can be the most resource heavy service, which needs special attention. Service Monitor requirements are based on the **number of monitored entities**.

To see the number of monitored entities, perform the following steps:

1. Open the Cloudera Manager Admin Console and click **Clusters > Cloudera Management Service**.
2. Find the **Cloudera Management Service Monitored Entities** chart. If the chart does not exist, add it from the **Chart Library**.

For more information about Cloudera Manager entities, see [Cloudera Manager Entity Types](#).

Tuning

Java Heap Size values (see the tables below) are rough estimates and some tuning might be necessary. From Cloudera Manager 6.3, Cloudera recommends using G1 garbage collector (G1GC) for Service Monitor. G1GC eliminates long JVM pauses, but uses a bit more CPU and RAM. It is the default for new installations.

Using G1GC

1. Open the Service Monitor configuration page and find **Java Configuration Options for Service Monitor**.
2. Add `-XX:+UseG1GC -XX:-UseConcMarkSweepGC -XX:-UseParNewGC` to the text box if it has not been added before.

Verifying your tuned settings

1. Go to the Service Monitor.
2. Check the **Garbage Collection Time** chart. It should show values lower than 3s.
3. Check the **JVM Heap Memory Usage** chart. It should show a healthy zig-zag shaped memory usage pattern.

The log should not contain "OutOfMemoryError" and "JVM Pause" messages with longer duration than 3s. See the "Service Monitor Log Directory" configuration for log files location. The default location is `/var/log/cloudera-scm-firehose`.

Clusters with HDFS, YARN, or Impala

Use the recommendations in this table for clusters where the only services with worker roles are HDFS, YARN, or Impala.

| Number of Monitored Entities | Number of Hosts | Required Java Heap Size | Recommended Non-Java Heap Size |
|------------------------------|-----------------|-------------------------|--------------------------------|
| 0-2,000 | 0-100 | 1 GB | 6 GB |
| 2,000-4,000 | 100-200 | 1.5 GB | 6 GB |
| 4,000-8,000 | 200-400 | 1.5 GB | 12 GB |
| 8,000-16,000 | 400-800 | 2.5 GB | 12 GB |

| Number of Monitored Entities | Number of Hosts | Required Java Heap Size | Recommended Non-Java Heap Size |
|------------------------------|-----------------|-------------------------|--------------------------------|
| 16,000-20,000 | 800-1,000 | 3.5 GB | 12 GB |

Clusters with HBase, Solr, Kafka, or Kudu

Use these recommendations when services such as HBase, Solr, Kafka, or Kudu are deployed in the cluster. These services typically have larger quantities of monitored entities.

| Number of Monitored Entities | Number of Hosts | Required Java Heap Size | Recommended Non-Java Heap Size |
|------------------------------|-----------------|-------------------------|--------------------------------|
| 0-30,000 | 0-100 | 2 GB | 12 GB |
| 30,000-60,000 | 100-200 | 3 GB | 12 GB |
| 60,000-120,000 | 200-400 | 3.5 GB | 12 GB |
| 120,000-240,000 | 400-800 | 8 GB | 20 GB |

Host Monitor

The requirements for the Host Monitor are based on the number of monitored entities.

To see the number of monitored entities, perform the following steps:

1. Open the Cloudera Manager Admin Console and click **Clusters > Cloudera Management Service**.
2. Find the **Cloudera Management Service Monitored Entities** chart. If the chart does not exist, add it from the **Chart Library**.

For information about tuning, see [Tuning](#) on page 6.

For more information about Cloudera Manager entities, see [Cloudera Manager Entity Types](#).

| Number of Hosts | Number of Monitored Entities | Heap Size | Non-Java Heap Size |
|-----------------|------------------------------|-----------|--------------------|
| 0-200 | <6k | 1 GB | 2 GB |
| 200-800 | 6k-24k | 2 GB | 6 GB |
| 800-1000 | 24k-30k | 3 GB | 6 GB |

Ensure that you have at least 25 GB of disk space available for the Host Monitor, Service Monitor, Reports Manager, and Events Server databases.

For more information refer to [Host Monitor and Service Monitor Memory Configuration](#).

Reports Manager

The Reports Manager fetches the fsimage from the NameNode at regular intervals. It reads the fsimage and creates a Lucene index for it. To improve the indexing performance, Cloudera recommends provisioning a host as powerful as possible and dedicating an SSD disk to the Reports Manager.

Table 1: Reports Manager

| Component | Java Heap | CPU | Disk |
|-----------------|------------------------------------|--|---|
| Reports Manager | 3-4 times the size of the fsimage. | <ul style="list-style-type: none"> • Minimum: 8 cores • Recommended: 16 cores (32 cores, with hyperthreading enabled.) | 1 dedicated disk that is at least 20 times the size of the fsimage. Cloudera strongly recommends using SSD disks. |

Agent Hosts

An unpacked parcel requires approximately three times the space of the packed parcel that is stored on the Cloudera Manager Server.

| Component | Storage | Notes |
|------------------------|---------------|--|
| Partition hosting /opt | 15 GB minimum | Usage grows as new parcels are downloaded to cluster hosts. |
| /var/log | 2 GB per role | Each role running on the host will need at least 2 GB of disk space. |

Event Server

The following table lists the minimum requirements for the Event Server:

| CPU | RAM | Storage |
|--------|--------|--|
| 1 core | 256 MB | <ul style="list-style-type: none"> 5 GB for the Event Database 20 GB for the Event Server Index Directory. The location of this directory is set by the Event Server Index Directory Event Server configuration property. |

Alert Publisher

The following table lists the minimum requirements for the Alert Publisher:

| CPU | RAM | Storage |
|--------|------|---------------------------------|
| 1 core | 1 GB | Minimum of 1 disk for log files |

Cloudera Navigator

The sizing of Navigator components varies heavily depending on the size of the cluster and the number of audit events generated. Refer to [Minimum Recommended Memory and Disk Space](#) for more information.

Table 2: Cloudera Navigator

| Component | Java Heap / Memory | CPU | Disk |
|------------------------|--|-----------------|--|
| Navigator Audit Server | Minimum: 2-3 GB of Java Heap Configure this value using the Java Heap Size of Auditing Server in Bytes configuration property. | Minimum: 1 core | The database used by the Navigator Audit Server must be able to accommodate hundreds of gigabytes (or tens of millions of rows per day). The database size may reach a terabyte. Ideally, the database should not be shared with other services because the audit insertion rate can overwhelm the database server making other services using same database less responsive. |

| Component | Java Heap / Memory | CPU | Disk |
|---------------------------|---|-----------------|--|
| | | | See Storage Space Planning for Cloudera Navigator . |
| Navigator Metadata Server | <ul style="list-style-type: none"> • Minimum: 10 GB of Java Heap • Recommended: 20 GB Java Heap <p>Add 20 GB for operating system buffer cache, however memory requirements can be much higher on a busy cluster and could require provisioning a dedicated host. Navigator logs include estimates based on the number of objects it is tracking.</p> <p>Configure this value using the Java Heap Size of Navigator Metadata Server in Bytes configuration property.</p> | Minimum: 1 core | <ul style="list-style-type: none"> • Minimum: 50 GB • Recommended: 100-200 GB <div style="border: 1px solid black; padding: 5px;"> <p>Note:</p> <p>Data stored by the Metadata server grows indefinitely unless you run the purge function. If you have not set up the purge function to run at a scheduled interval, Cloudera recommends that you run the purge function to reclaim disk space and keep data growth (and the corresponding memory requirement) in check.</p> <p>See Administration (Navigator Console).</p> </div> |

Cloudera Data Science Workbench

| Hardware Component | Requirement | Notes |
|--------------------|----------------------|---|
| CPU | 16+ CPU (vCPU) cores | Allocate at least 1 CPU core per session. 1 CPU core is often adequate for light workloads. |
| Memory | 32 GB RAM | <ul style="list-style-type: none"> • As a general guideline, Cloudera recommends nodes with RAM between 60GB and 256GB • Allocating less than 2 GB of RAM can lead to out-of-memory errors for many applications. |

| Hardware Component | Requirement | Notes |
|--------------------|--|---|
| Disk | <ul style="list-style-type: none"> • Root Volume: 100 GB • Application Block Device or Mount Point (Master Host Only): 1 TB • Docker Image Block Device: 1 TB | SSDs are strongly recommended for application data storage. |

For more information on scaling guidelines and storage requirements for cloud providers such as AWS and Azure, see [Requirements and Supported Platforms](#) in the Cloudera Data Science Workbench documentation.

CDH
Accumulo

Running Apache Accumulo on top of a CDH 6.0.0 cluster is not currently supported. If you try to upgrade to CDH 6.0.0 you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Flume

| Component | Java Heap | CPU | Disk |
|-----------|---|---|---|
| Flume | <ul style="list-style-type: none"> • Minimum: 1 GB • Maximum 4 GB • Java Heap size should be greater than the maximum channel capacity <p>Set this value using the Java Heap Size of Agent in Bytes Flume configuration property.</p> <p>See Flume Memory Consumption</p> | <p>Calculate the number of cores using the following formula:</p> $(\text{Number of sources} + \text{Number of sinks}) / 2$ | Multiple disks are recommended for file channels, either a JBOD setup or RAID10 (preferred due to increased reliability). |

HDFS

Table 3: HDFS

| Component | Memory | CPU | Disk |
|-------------|--|--|--|
| JournalNode | <p>1 GB (default)</p> <p>Set this value using the Java Heap Size of JournalNode in Bytes HDFS configuration property.</p> | 1 core minimum | 1 dedicated disk |
| NameNode | <ul style="list-style-type: none"> • Minimum: 1 GB (for proof-of-concept deployments) • Add an additional 1 GB for each additional 1,000,000 blocks <p>Snapshots and encryption can increase</p> | Minimum of 4 dedicated cores; more may be required for larger clusters | <ul style="list-style-type: none"> • Minimum of 2 dedicated disks for metadata • 1 dedicated disk for log files (This disk may be shared with the operating system.) • Maximum disks: 4 |

| Component | Memory | CPU | Disk |
|-----------|--|---|---|
| | <p>the required heap memory.</p> <p>See Sizing NameNode Heap Memory</p> <p>Set this value using the Java Heap Size of NameNode in Bytes HDFS configuration property.</p> | | |
| DataNode | <p>Minimum: 4 GB</p> <p>Increase the memory for higher replica counts or a higher number of blocks per DataNode. When increasing the memory, Cloudera recommends an additional 1 GB of memory for every 1 million replicas above 4 million on the DataNodes. For example, 5 million replicas require 5 GB of memory.</p> <p>Set this value using the Java Heap Size of DataNode in Bytes HDFS configuration property.</p> | <p>Minimum: 4 cores. Add more cores for highly active clusters.</p> | <p>Minimum: 4</p> <p>Maximum: 24</p> <p>The maximum acceptable size will vary depending upon how large average block size is. The DN's scalability limits are mostly a function of the number of replicas per DN, not the overall number of bytes stored. That said, having ultra-dense DNs will affect recovery times in the event of machine or rack failure. Cloudera does not support exceeding 100 TB per data node. You could use 12 x 8 TB spindles or 24 x 4TB spindles. Cloudera does not support drives larger than 8 TB.</p> |



Warning: Running CDH on storage platforms other than direct-attached physical disks can provide suboptimal performance. Cloudera Enterprise and the majority of the Hadoop platform are optimized to provide high performance by distributing work across a cluster that can utilize data locality and fast local I/O. Refer to the [Cloudera Enterprise Storage Device Acceptance Criteria Guide](#) for more information about using non-local storage.

HBase

| Component | Java Heap | CPU | Disk |
|-----------|---|--|--|
| Master | <ul style="list-style-type: none"> 100-10,000 regions: 4 GB 10,000 or more regions with 200 or more Region Servers: 8 GB 10,000 or more regions with 300 or more Region Servers: 12 GB <p>Set this value using the Java Heap Size of HBase Master</p> | <p>Minimum 4 dedicated cores. You can add more cores for larger clusters, when using replication, or for bulk loads.</p> | <p>1 disk for local logs, which can be shared with the operating system and/or other Hadoop logs</p> |

| Component | Java Heap | CPU | Disk |
|---------------|---|----------------------------|---|
| | in Bytes HBase configuration property. | | |
| Region Server | <ul style="list-style-type: none"> • Minimum: 8 GB • Medium-scale production: 16 GB • Heap larger than 16 GB requires special Garbage Collection tuning. See Configuring the HBase BlockCache <p>Set this value using the Java Heap Size of HBase RegionServer in Bytes HBase configuration property.</p> | Minimum: 4 dedicated cores | <ul style="list-style-type: none"> • 4 or more spindles for each HDFS DataNode • 1 disk for local logs (this disk can be shared with the operating system and/or other Hadoop logs) |
| Thrift Server | <p>1 GB - 4 GB</p> <p>Set this value using the Java Heap Size of HBase Thrift Server in Bytes HBase configuration property.</p> | Minimum 2 dedicated cores. | 1 disk for local logs, which can be shared with the operating system and other Hadoop logs. |

 **Note:** Consider adding more HBase Thrift Servers for production environments and deployments with a large number of Thrift client to scale horizontally.

Hive

| Component | Java Heap | CPU | Disk | |
|--|--|----------|---------------------------|--|
| HiveServer 2 | Single Connection | 4 GB | Minimum 4 dedicated cores | Minimum 1 disk This disk is required for the following: <ul style="list-style-type: none"> • HiveServer2 log files • stdout and stderr output files • Configuration files • Operation logs stored in the <code>operation_logs_dir</code> directory, which is configurable • Any temporary files that might be created by local map tasks under the <code>/tmp</code> directory |
| | 2-10 connections | 4-6 GB | | |
| | 11-20 connections | 6-12 GB | | |
| | 21-40 connections | 12-16 GB | | |
| | 41 to 80 connections | 16-24 GB | | |
| | Cloudera recommends splitting HiveServer2 into multiple instances and load balancing them once you start allocating more than 16 GB to HiveServer2. The objective is to adjust the size to reduce the impact of Java garbage collection on active processing by the service. | | | |
| Set this value using the Java Heap Size of HiveServer2 in | | | | |

| Component | Java Heap | CPU | Disk |
|----------------|---|----------|---|
| | Bytes Hive configuration property. | | |
| Hive Metastore | Single Connection | 4 GB | Minimum 4 dedicated cores |
| | 2-10 connections | 4-10 GB | |
| | 11-20 connections | 10-12 GB | |
| | 21-40 connections | 12-16 GB | |
| | 41 to 80 connections | 16-24 GB | |
| | Set this value using the Java Heap Size of Hive Metastore Server in Bytes Hive configuration property. | | Minimum 1 disk This disk is required so that the Hive metastore can store the following artifacts: <ul style="list-style-type: none"> • Logs • Configuration files • Backend database that is used to store metadata if the database server is also hosted on the same node |
| Beeline CLI | Minimum: 2 GB | N/A | N/A |

Hive on Spark Executor Nodes

| Component | Memory | CPU | Disk |
|---------------|--|--|---|
| Hive-on-Spark | <ul style="list-style-type: none"> • Minimum: 16 GB • Recommended: 32 GB for larger data sizes <p>Individual executor heaps should be no larger than 16 GB so machines with more RAM can use multiple executors.</p> | <ul style="list-style-type: none"> • Minimum: 4 cores • Recommended: 8 cores for larger data sizes | Disk space requirements are driven by scratch space requirements for Spark spill. |
| | For more information on how to reserve YARN cores and memory that will be used by Spark executors, refer to Tuning Apache Hive on Spark in CDH . | | |

HSM KMS

| Component | Memory | CPU | Disk |
|-------------------|-----------|---------------------------------|---|
| Navigator HSM KMS | 16 GB RAM | Minimum: 2 GHz 64-bit quad core | 40 GB, using moderate to high-performance drives. |

Hue

| Component | Memory | CPU | Disk |
|------------|--|--|---|
| Hue Server | <ul style="list-style-type: none"> • Minimum: 4 GB • Maximum 10 GB • If the cluster uses the Hue load balancer, add additional memory | <p>Minimum: 1 Core to run Django</p> <p>When Hue is configured for high availability, add additional cores</p> | <p>Minimum: 10 GB for the database, which grows proportionally according to the cluster size and workloads.</p> <p>When Hue is configured for high availability, add temp space is required</p> |



Note: Hue is limited by cgroup settings. In Cloudera Manager, all memory soft/hard limits are set to -1.

For more information about Hue high availability, see [How to Add a Hue Load Balancer](#).

Impala

Sizing requirements for Impala can vary significantly depending on the size and types of workloads using Impala.

| Component | Native Memory | JVM Heap | CPU | Disk |
|----------------|--|--|---|---|
| Impala Daemon | Set this value using the Impala Daemon Memory Limit configuration property. <ul style="list-style-type: none"> Minimum: 32 GB Recommended: 128 GB | Set this value using the Java Heap Size of Impala Daemon in Bytes configuration property for the Coordinator Impala Daemons. <ul style="list-style-type: none"> Minimum: 4 GB Recommended: 8 GB | <ul style="list-style-type: none"> Minimum: 4 Recommended: 16 or more CPU instruction set: AVX2 | <ul style="list-style-type: none"> Minimum: 1 disk Recommended: 8 or more |
| Catalog Server | Set this value using the Java Heap Size of Catalog Server in Bytes configuration property. <ul style="list-style-type: none"> Minimum: 4 GB Recommended: 8 GB | | <ul style="list-style-type: none"> Minimum: 4 Recommended: 16 or more CPU instruction set: AVX2 | <ul style="list-style-type: none"> Minimum and Recommended: 1 disk |

For the networking topology for multi-rack cluster, [Leaf-Spine](#) is recommended for the optimal performance.

Kafka

Kafka requires a fairly small amount of resources, especially with some configuration tuning. By default, Kafka, can run on as little as 1 core and 1GB memory with storage scaled based on requirements for data retention.

CPU is rarely a bottleneck because Kafka is I/O heavy, but a moderately-sized CPU with enough threads is still important to handle concurrent connections and background tasks.

Kafka brokers tend to have a similar hardware profile to HDFS data nodes. How you build them depends on what is important for your Kafka use cases. Use the following guidelines:

| To affect performance of these features: | Adjust these parameters: |
|--|--------------------------|
| Message Retention | Disk size |
| Client Throughput (Producer & Consumer) | Network capacity |
| Producer throughput | Disk I/O |
| Consumer throughput | Memory |

A common choice for a Kafka node is as follows:

| Component | Memory/Java Heap | CPU | Disk |
|-----------|---|--------------|--|
| Broker | <ul style="list-style-type: none"> RAM: 64 GB Recommended Java heap: 4 GB | 12- 24 cores | <ul style="list-style-type: none"> 1 HDD For operating system 1 HDD for Zookeeper dataLogDir |

| Component | Memory/Java Heap | CPU | Disk |
|-------------|---|------------------------|--|
| | Set this value using the Java Heap Size of Broker Kafka configuration property. See Other Kafka Broker Properties table . | | <ul style="list-style-type: none"> 10- HDDs, using Raid 10, for Kafka data |
| MirrorMaker | 1 GB heap Set this value using the Java Heap Size of MirrorMaker Kafka configuration property. | 1 core per 3-4 streams | No disk space needed on MirrorMaker instance. Destination brokers should have sufficient disk space to store the topics being copied over. |

Networking requirements: Gigabit Ethernet or 10 Gigabit Ethernet. Avoid clusters that span multiple data centers.

Key Trustee Server

| Component | Memory | CPU | Disk |
|---|--------|------------------------|--|
| Key Trustee Server | 8 GB | 1 GHz 64-bit quad core | 20 GB, using moderate to high-performance drives |
| <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">  Note: KTS requires a additional dedicated resources. For more information, refer to Data at Rest Encryption Requirements. </div> | | | |

Key Trustee KMS

| Component | Memory | CPU | Disk |
|--|--------|------------------------|--|
| Key Trustee KMS | 16 GB | 2 GHz 64-bit quad core | 40 GB, using moderate to high-performance drives |
| <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">  Note: Cloudera recommends using machines with capabilities equivalent to your NameNode hosts, with Intel CPUs that support AES-NI for optimum performance. </div> | | | |

Kudu

| Component | Memory | CPU | Disk |
|---------------|---|---|---|
| Tablet Server | <ul style="list-style-type: none"> • Minimum: 4 GB • Recommended: 10 GB <p>Additional hardware may be required, depending on the workloads running in the cluster. If you are using Impala, see the Impala sizing guidelines.</p> | <p>Kudu currently requires a CPU that supports the SSSE3 and SSE4.2 instruction sets.</p> <p>If you are to run Kudu inside a VM, enable SSE4.2 pass-through to pass through SSE4.2 support into the VM.</p> | 1 disk for write-ahead log (WAL). Using an SSD drive may improve performance. |
| Master | <ul style="list-style-type: none"> • Minimum: 256 MB • Recommended: 1 GB | | 1 disk |

For more information, see [Kudu Server Management](#).

Oozie

| Component | Java Heap | CPU | Disk |
|-----------|--|-----------------------|-----------------------|
| Oozie | <ul style="list-style-type: none"> • Minimum: 1 GB (this is the default set by Cloudera Manager). This is sufficient for less than 10 simultaneous workflows, without forking. • If you notice excessive garbage collection, or out-of-memory errors, increase the heap size to 4 GB for medium-size production clusters or to 8 GB for large-size production clusters. • Set this value using the Java Heap Size of Oozie Server in Bytes Oozie configuration property. | No resources required | No resources required |

Additional tuning:

For workloads with many coordinators that run with complex workflows (a **max concurrency reached!** warning appears in the log and the Oozie `admin -queuedump` command shows a large queue):

- Increase the value of the `oozie.service.CallableQueueService.callable.concurrency` property to 50.
- Increase the value of the `oozie.service.CallableQueueService.threads` property to 200.

Do not use a Derby database as a backend database for Oozie.

Search

| Component | Java Heap | CPU | Disk |
|-----------|--|--|---|
| Solr | <ul style="list-style-type: none"> • Small workloads, or evaluations: 16 GB • Smaller production environments: 32 GB • Larger production environments: 96 GB is sufficient for most clusters. <p>Set this value using the Java Heap Size of Solr Server in Bytes Solr configuration property.</p> <p>See</p> | <ul style="list-style-type: none"> • Minimum: 4 • Recommended: 16 for production workloads | No requirement. Solr uses HDFS for storage. |

Note the following considerations for determining the optimal amount of heap memory:

- **Size of searchable material:** The more searchable material you have, the more memory you need. All things being equal, 10 TB of searchable data requires more memory than 1 TB of searchable data.
- **Content indexed in the searchable material:** Indexing all fields in a collection of logs, email messages, or Wikipedia entries requires more memory than indexing only the Date Created field.
- **The level of performance required:** If the system must be stable and respond quickly, more memory may help. If slow responses are acceptable, you may be able to use less memory.

For more information refer to [Deployment Planning for Cloudera Search](#).

Sentry

| Component | Java Heap | CPU | Disk |
|---------------|--|------------|------|
| Sentry Server | <ul style="list-style-type: none"> • Minimum: 576 MB • Recommended: 2.5 GB per million objects in the Hive database (servers, databases, tables, partitions, columns, URIs, and views) <p>Set this value with the Java Heap Size of Sentry Server in Bytes Sentry configuration property.</p> | Minimum: 4 | |

For more information about Sentry requirements, see [Before You Install Sentry](#).

Spark

| Component | Java Heap | CPU | Disk |
|----------------------|--|-----|-------------------------------|
| Spark History Server | <p>Minimum: 512 MB</p> <p>Set this value using the Java Heap Size of History Server</p> | 1 | Minimum 1 disk for log files. |

| Component | Java Heap | CPU | Disk |
|-----------|--|---|------|
| | in Bytes Spark configuration property. | <div style="border: 1px solid orange; padding: 5px;"> <p>Important: Cloudera recommends that you adjust the number of CPUs and memory for the Spark History Server based on your specific cluster usage patterns.</p> </div> | |

YARN

| Component | Java Heap | CPU | Other Recommendations |
|--------------------|--|---|--|
| Job History Server | <ul style="list-style-type: none"> • Minimum: 1 GB • Increase memory by 1.6 GB for each 100,000 tasks kept in memory. For example: 5 jobs @ 100,000 mappers + 20,000 reducers = 600,000 total tasks requiring 9.6 GB of heap. <p>See the Other Recommendations column for additional tuning suggestions.</p> <p>Set this value using the Java Heap Size of JobHistory Server in Bytes YARN configuration property.</p> | Minimum: 1 core | <ul style="list-style-type: none"> • Set the mapreduce.jobhistory.hist.format property to binary (history files will load about 2x-3x faster with this setting). Available in CDH 5.5.0 or higher only. • Set the mapreduce.jobhistory.load.task.size property to a total loaded task count. Using the example in the Java Heap column to the left, of 650,000 total tasks, you can set it to 700,000 to allow for some safety margin. This should also prevent the JobHistoryServer from hanging during garbage collection, since the job count limit does not have a task limit. |
| NodeManager | <p>Minimum: 1 GB.</p> <p>Configure additional heap memory for the following conditions:</p> <ul style="list-style-type: none"> • Large number of containers | <ul style="list-style-type: none"> • Minimum: 8-16 cores • Recommended: 32-64 cores | <p>Disks:</p> <ul style="list-style-type: none"> • Minimum: 8 disks • Recommended: 12 or more disks <p>Networking:</p> <ul style="list-style-type: none"> • Minimum: Dual 1Gbps or faster |

| Component | Java Heap | CPU | Other Recommendations |
|-----------------|--|-----------------|--|
| | <ul style="list-style-type: none"> Large shuffle sizes in Spark or MapReduce <p>Set this value using the Java Heap Size of NodeManager in Bytes YARN configuration property.</p> | | <ul style="list-style-type: none"> Recommended: Single/Dual 10 Gbps or faster |
| ResourceManager | <p>Minimum: 6 GB</p> <p>Configure additional heap memory for the following conditions:</p> <ul style="list-style-type: none"> More jobs Larger cluster size Number of retained finished applications (configured with the yarn.nodemanager.heapsize property). Scheduler configuration <p>Set this value using the Java Heap Size of ResourceManager in Bytes YARN configuration property.</p> | Minimum: 1 core | |
| Other Settings | <ul style="list-style-type: none"> Set the ApplicationMaster Memory YARN configuration property to 512 MB Set the Container Memory Minimum YARN configuration property to 1 GB. | N/A | N/A |

For more information, see [Tuning YARN](#).

ZooKeeper

| Component | Java Heap | CPU | Disk |
|------------------|---|------------------|--|
| ZooKeeper Server | <ul style="list-style-type: none"> Minimum: 1 GB Increase heap size when watching 10,000 - 100,000 ephemeral znodes and are using 1,000 or more clients. <p>Set this value using the Java Heap Size of ZooKeeper Server in Bytes ZooKeeper configuration property.</p> | Minimum: 4 cores | ZooKeeper was not designed to be a low-latency service and does not benefit from the use of SSD drives. The ZooKeeper access patterns – append-only writes and sequential reads – were designed with spinning disks in mind. Therefore Cloudera recommends using HDD drives. |

Additional information:

- [Managing ZooKeeper](#)
- [ZooKeeper Administration Guide: Things to Avoid](#)

Operating System Requirements

The following topics describe the operating system requirements for Cloudera software:

Software Dependencies

- **Python** - Python dependencies for the different CDP components is mentioned below:

Cloudera Manager

Cloudera Manager supports the system Python on supported OSes, and does not support Python 3.

Hue

Hue requires Python 2.7, and does not support Python 3.

Spark

Spark 2.4 supports Python 2.7 and 3.4-3.7.

Spark 3.0 supports Python 2.7 and 3.4 and higher, although support for Python 2 and 3.4 to 3.5 is deprecated.

Spark 3.1 supports Python 3.6 and higher.

If the right level of Python is not picked up by default, set the `PYSPARK_PYTHON` and `PYSPARK_DRIVER_PYTHON` [environment variables](#) to point to the correct Python executable before running the `pyspark` command.

- **Perl** - Cloudera Manager requires [perl](#).
- **python-psycopg2** - Cloudera Manager 6 has a dependency on the package `python-psycopg2`. Hue in CDH 6 requires a higher version of `psycopg2` than is required by the Cloudera Manager dependency. For more information, see [Installing the psycopg2 Python Package](#).
- **iproute package** - Cloudera Enterprise 6 has a dependency on the `iproute` package. Any host that runs the Cloudera Manager Agent requires the package. The required version varies depending on the operating system:

Table 4: iproute package

| Operating System | iproute version |
|-------------------|-----------------|
| RHEL 7 Compatible | iproute-3.10 |
| RHEL 6 Compatible | iproute-2.6 |
| SLES 12 SP2, SP3 | iproute2-3.12 |
| SLES 12 SP4 | iproute2-4.4 |
| SLES 12 SP5 | iproute2-4.12 |

CDH and Cloudera Manager Supported Operating Systems

CDH provides 64-bit packages for select versions of RHEL-compatible, SLES, and Ubuntu operating systems.

**Important:**

In order to be covered by Cloudera Support:

- All CDH hosts in a logical cluster must run on the same major OS release.
- Cloudera supports a *temporarily* mixed OS configuration during an OS upgrade project.
- Cloudera Manager must run on the same OS release as one of the CDH clusters it manages.

Cloudera recommends running the same minor release on all cluster nodes. However, the risk caused by running different minor OS releases is considered lower than the risk of running different major OS releases.

Points to note:

- Red Hat only supports specific upgrades from RHEL 6 to 7. Contact your OS vendor and review the Red Hat article [What are the supported use cases for upgrading to RHEL 7?](#)
- Cloudera does not support CDH cluster deployments in Docker containers.
- Cloudera Enterprise, with the exception of Cloudera Navigator Encrypt, is supported on platforms with Security-Enhanced Linux (SELinux) enabled and in `enforcing` mode. Cloudera is not responsible for policy support or policy enforcement. If you experience issues with SELinux, contact your OS provider.

Cloudera Enterprise 6.3.x Supported Operating Systems

| Operating System | Version (bold=new) |
|-------------------------------------|---|
| RHEL-compatible | |
| RHEL/CentOS/OL with RHCK kernel | 7.9 , 7.8, 7.7, 7.6, 7.5, 7.4, 7.3, 7.2 6.10, 6.9 |
| Oracle Linux (OL) | 7.6, 7.4, 7.3, 7.2 (UEK default) 6.10 (UEK default) |
| SUSE Linux Enterprise Server | |
| SLES | 12 SP5 , 12 SP4*, 12 SP3 |
| Ubuntu | |
| Ubuntu | 18.04 LTS (Bionic) 16.04 LTS (Xenial) |

* SLES 12 SP4 certification includes a known issue when MariaDB is being used as the Cloudera Manager server database: use MariaDB 10.0 instead of the default MariaDB 10.2 provided in the operating system release.

See [OPSAPS-52340](#).

Cloudera Enterprise 6.2.x Supported Operating Systems

| Operating System | Version (bold=new) |
|---------------------------------|--|
| RHEL-compatible | |
| RHEL/CentOS/OL with RHCK kernel | 7.9 , 7.8, 7.7, 7.6, 7.5, 7.4, 7.3, 7.2 6.10, 6.9, 6.8 |
| Oracle Linux (OL) | 7.6 , 7.4, 7.3, 7.2 (UEK default) 6.10 (UEK default) |

| Operating System | Version (bold=new) |
|-------------------------------------|---|
| SUSE Linux Enterprise Server | |
| SLES | 12 SP5 , 12 SP4*, 12 SP3, 12 SP2 |
| Ubuntu | |
| Ubuntu | 18.04 LTS (Bionic) 16.04 LTS (Xenial) |

* SLES 12 SP4 certification includes a known issue when MariaDB is being used as the Cloudera Manager server database: use MariaDB 10.0 instead of the default MariaDB 10.2 provided in the operating system release.

See [OPSAPS-52340](#).

Cloudera Enterprise 6.1.x Supported Operating Systems

| Operating System | Version (bold=new) |
|-------------------------------------|--|
| RHEL-compatible | |
| RHEL/CentOS/OL with RHCK kernel | 7.6 , 7.5, 7.4, 7.3, 7.2 6.10, 6.9, 6.8 |
| Oracle Linux (OL) | 7.4, 7.3, 7.2 (UEK default) 6.10 (UEK default) |
| SUSE Linux Enterprise Server | |
| SLES | 12 SP4* , 12 SP3, 12 SP2 |
| Ubuntu | |
| Ubuntu | 16.04 LTS (Xenial) |

* SLES 12 SP4 certification includes a known issue when MariaDB is being used as the Cloudera Manager server database: use MariaDB 10.0 instead of the default MariaDB 10.2 provided in the operating system release.

See [OPSAPS-52340](#).

Cloudera Enterprise 6.0.x Supported Operating Systems

| Operating System | Version (bold=new) |
|-------------------------------------|---|
| RHEL-compatible | |
| RHEL/CentOS/OL with RHCK kernel | 7.6 , 7.5, 7.4, 7.3, 7.2 6.10 , 6.9, 6.8 |
| Oracle Linux (OL) | 7.4, 7.3, 7.2 (UEK default) |
| SUSE Linux Enterprise Server | |
| SLES | 12 SP4* , 12 SP3, 12 SP2 |
| Ubuntu | |
| Ubuntu | 16.04 LTS (Xenial) |

* SLES 12 SP4 certification includes a known issue when MariaDB is being used as the Cloudera Manager server database: use MariaDB 10.0 instead of the default MariaDB 10.2 provided in the operating system release.

See [OPSAPS-52340](#).

Filesystem Requirements Supported Filesystems

The Hadoop Distributed File System (HDFS) is designed to run on top of an underlying filesystem in an operating system. Cloudera recommends that you use either of the following filesystems tested on the [supported operating systems](#):

- **ext3**: This is the most tested underlying filesystem for HDFS.
- **ext4**: This scalable extension of ext3 is supported in more recent Linux releases.



Important: Cloudera does not support in-place upgrades from ext3 to ext4. Cloudera recommends that you format disks as ext4 before using them as data directories.

- **XFS**: This is the default filesystem in RHEL 7.
- **S3**: Amazon Simple Storage Service

Kudu Filesystem Requirements - Kudu is supported on ext4 and XFS. Kudu requires a kernel version and filesystem that supports hole punching. Hole punching is the use of the `fallocate(2)` system call with the `FALLOC_FL_PUNCH_HOLE` option set. For more details, see [Error during hole punch test](#).

File Access Time

Linux filesystems keep metadata that record when each file was accessed. This means that even reads result in a write to the disk. To speed up file reads, Cloudera recommends that you disable this option, called `atime`, using the `noatime` mount option in `/etc/fstab`:

```
/dev/sdb1 /data1 ext4 defaults,noatime 0
```

Apply the change without rebooting:

```
mount -o remount /data1
```

Filesystem Mount Options

The filesystem `mount` options have a `sync` option that allows you to write synchronously.

Using the `sync` filesystem mount option reduces performance for services that write data to disks, such as HDFS, YARN, Kafka and Kudu. In CDH, most writes are already replicated. Therefore, synchronous writes to disk are unnecessary, expensive, and do not measurably improve stability.

NFS and NAS options are not supported for use as DataNode Data Directory mounts, even when using Hierarchical Storage features.

Mounting `/tmp` as a filesystem with the `noexec` option is sometimes done as an enhanced security measure to prevent the execution of files stored there. However, this causes multiple problems with various parts of Cloudera Manager and CDH. Therefore, Cloudera does not support mounting `/tmp` with the `noexec` option.

`nproc` Configuration

Cloudera Manager automatically sets `nproc` configuration in `/etc/security/limits.conf`, but this configuration can be overridden by individual files in `/etc/security/limits.d/`. This can cause [problems](#) with Apache Impala and other components.

Make sure that the `nproc` limits are set sufficiently high, such as 65536 or 262144.

`nscd` for Kudu

Although not a strict requirement, it's highly recommended that you use `nscd` to cache both DNS name resolution and static name resolution for Kudu. See [Troubleshooting Kudu](#) for more information.

Database Requirements



Important: When you restart processes, the configuration for each of the services is redeployed using information saved in the Cloudera Manager database. If this information is not available, your cluster cannot start or function correctly. You must schedule and maintain regular backups of the Cloudera Manager database to recover the cluster in the event of the loss of this database. For more information, see [Backing Up Databases](#).

Cloudera Manager and CDH come packaged with an embedded PostgreSQL database for use in non-production environments. The embedded PostgreSQL database is not supported in production environments. For production environments, you must configure your cluster to use dedicated external databases.

After installing a database, upgrade to the latest patch and apply appropriate updates. Available updates may be specific to the operating system on which it is installed.

Notes:

- Cloudera recommends that you use the default versions of databases that correspond to the operating system of your cluster nodes. Refer to the operating system's documentation to verify support if you choose to use a database other than the default.
- Use UTF8 encoding for all custom databases. MySQL and MariaDB must use the MySQL `utf8` encoding, not `utf8mb4`.
- For MySQL 5.7, you must install the *MySQL-shared-compat* or *MySQL-shared* package. This is required for the Cloudera Manager Agent installation.
- MySQL GTID-based replication is not supported.
- Both the Community and Enterprise versions of MySQL are supported, as well as MySQL configured by the AWS RDS service.
- Before upgrading from CDH 5 to CDH 6, check the value of the `COMPATIBLE` initialization parameter in the Oracle Database using the following SQL query:

```
SELECT name, value FROM v$parameter WHERE name = 'compatible'
```

The default value is 12.2.0. If the parameter has a different value, you can set it to the default as shown in the [Oracle Database Upgrade Guide](#).



Note: Before resetting the `COMPATIBLE` initialization parameter to its default value, make sure you consider the effects of this change can have on your system.

Table 5: MySQL Support across Cloudera Enterprise 6 Releases

| MySQL Version | Cloudera Enterprise 6.x |
|---|-------------------------|
| 5.1 (default for RHEL/CentOS/OEL 6) | ✓ |
| 5.5 (default for Debian 8.9) | ✓ |
| 5.6 | ✓ |
| 5.7 (default for Ubuntu 16.04, 18.04 LTS) | ✓ |

Table 6: MariaDB Support across Cloudera Enterprise 6 Releases

| MariaDB Version | Cloudera Enterprise 6.3 | Cloudera Enterprise 6.2 | Cloudera Enterprise 6.0 - 6.1 |
|-------------------------------------|-------------------------|-------------------------|-------------------------------|
| 5.5 (default for RHEL/CentOS/OEL 7) | ✓ | ✓ | ✓ |

| MariaDB Version | Cloudera Enterprise 6.3 | Cloudera Enterprise 6.2 | Cloudera Enterprise 6.0 - 6.1 |
|--|---|-------------------------|-------------------------------|
| 10.0 (default for SLES 12 SP2/SP3, Debian 8.9, Ubuntu 16.04 LTS) | ✓ | ✓ | ✓ |
| 10.1 (default for Debian 9, Ubuntu 18.04 LTS) | ✓ | ✓ | |
| 10.2.0 - 10.2.7 | For Cloudera Enterprise versions 6.3.0, 6.3.1, and 6.3.3. See this Known issue: OPSAPS-52340 . | ✓ | ✓ |
| 10.2.8 | For Cloudera Enterprise 6.3.4. | | |

Table 7: 🐘 PostgreSQL Support across Cloudera Enterprise 6 Releases

| PostgreSQL Version | Cloudera Enterprise 6.1 - 6.3 | Cloudera Enterprise 6.0 |
|---|-------------------------------|-------------------------|
| 8.4 (default for RHEL/CentOS/OEL 6) | ✓ | ✓ |
| 9.2 (default for RHEL/CentOS/OEL 7) | ✓ | ✓ |
| 9.4 (default for Debian 8.9) | ✓ | ✓ |
| 9.5 (default for Ubuntu 16.04 LTS) | ✓ | |
| 9.6 (default for SLES 12 SP2/SP3, Debian 9) | ✓ | ✓ |
| 10.x (default for Ubuntu 18.04 LTS) | ✓ | |

Table 8: 🗄️ Oracle Support across Cloudera Enterprise 6 Releases

| Oracle Version | Cloudera Enterprise 6.x |
|---|-------------------------|
| 12.2 (default for RHEL/CentOS/OEL 6, 7) | ✓ |
| 18 | ✓ |
| 19 | ✓ |

RDBMS High Availability Support

Various Cloudera components rely on backing RDBMS services as critical infrastructure. You may require Cloudera components to support deployment in environments where RDBMS services are made highly-available. High availability (HA) solutions for RDBMS are implementation-specific, and can create constraints or behavioral changes in Cloudera components.

This section clarifies the support state and identifies known issues and limitations for HA deployments.

High Availability vs. Load Balancing

Understanding the difference between HA and load balancing is important for Cloudera components, which are designed to assume services are provided by a single RDBMS instance. Load balancing distributes operations across multiple RDBMS services in parallel, while HA focuses on service continuity. Load balanced deployments are often used as part of HA strategies to overcome demands of monitoring and failover management in an HA environment. While less

easier to implement, load-balanced deployments require applications tailored to the behavior and limitations of the particular technology.

Support Statement: Cloudera components are not designed for and do not support load balanced deployments of any kind. Any HA strategy involving multiple active RDBMS services must ensure all connections are routed to a single RDBMS service at any given time, regardless of vendor or HA implementation/technology.

General High Availability Support

Cloudera supports various RDBMS options, each of which have multiple possible strategies to implement HA. Cloudera cannot reasonably test and certify on each strategy for each RDBMS. Cloudera expects HA solutions for RDBMS to be transparent to Cloudera software, and therefore are not supported and debugged by Cloudera. It is the responsibility of the customer to provision, configure, and manage the RDBMS HA deployment, so that Cloudera software behaves as it would when interfacing with a single, non-HA service. Cloudera will support and help customers troubleshoot issues when a cluster has HA enabled. While diagnosing database-related problems in Cloudera components, customers may be required to temporarily disable or bypass HA mechanisms for troubleshooting purposes. If an HA-related issue is found, it is the responsibility of the customer to engage with the database vendor so that a solution to that issue can be found.

Support Statement: Cloudera Support may require customers to temporarily bypass HA layers and connect directly to supported RDBMS back-ends to troubleshoot issues. Issues observed only when connected through HA layers are the responsibility of the customer DBA staff to resolve.

Vendor-Specific Notes

Oracle RAC:

- Cloudera supports Oracle Exadata and RAC instances when they serve as back-end databases for CDH components without HA. Cloudera software is designed with the assumption of a single database instance, and supports normal operations between Cloudera Enterprise and Oracle Exadata (or RAC) in such an environment.
- Cloudera is an [Oracle Partner Network Gold](#) member, allowing us to download and use Oracle commercial software (such as RAC) for development and testing purposes.

MySQL Asynchronous Replication:

- Supported, tested, and certified
- Master/master or master/slave topographies are acceptable
- You must disable Global Transaction Identifiers (GTID)
- You must use the InnoDB storage engine

MySQL HA with Oracle Clusterware:

- Not tested or certified
- No known or expected problems
- Shared disk, active/passive MySQL hosts
 - Will guard against component failure on MySQL Server host
 - Won't guard against logical or physical corruption or loss
 - Separate DR plan is required
- Resources:
 - [Blog post](#)
 - [Oracle Clusterware product page](#)
 - [Grid Infrastructure Agent documentation](#)

MySQL InnoDB Cluster:

- Prohibited
- Requires enabling GTIDs

MySQL DRBD:

- Older HA tech stack for MySQL, does distributed block writes at OS kernel layer
- Does not add additional semantics or requirements
- Does have performance tradeoffs for write operations
- Poorly suited to write-intensive use cases (e.g. Navigator)

MySQL Cluster (NDB):

- Prohibited
- Very different performance, management and operational characteristics from InnoDB storage engine

Galera Cluster (Percona Cluster, MariaDB Cluster):

- Prohibited
- Adds cluster-wide optimistic locking. This can cause unexpected deadlock errors at commit, or worse, undetected logical database corruption caused by naive retry logic in Cloudera applications

Java Requirements



Note: A Java optimization called [compressed oops](#) (ordinary object pointers) enables a 64-bit JVM to address heap sizes up to about 32 GB using 4-byte pointers. For larger heap sizes, 8-byte pointers are required. This means that a heap size slightly less than 32 GB can hold more objects than a heap size slightly more than 32 GB.

If you do not need more than 32 GB heap, set your heap size to 31GB or less to avoid this issue. If you need 32 GB or more, set your heap size to 48 GB or higher to account for the larger pointers. In general, for heap sizes above 32 GB, multiply the amount of heap you need by 1.5.

Only 64 bit JDKs are supported. Cloudera Manager 6 and CDH 6 do not support JDK 7. Although JDK 7 is supported on all versions of CDH 5, a CDH 5.x cluster that is managed by Cloudera Manager 6.x must use JDK 8 on all cluster hosts. [Oracle JDK 8](#) is supported in Cloudera Manager 6 and CDH 6. JDK 8 is also supported in CDH 5.3 and higher.

OpenJDK 8 is supported in Cloudera Enterprise 6.1.0 and higher, as well as Cloudera Enterprise 5.16.1 and higher. For installation and migration instructions, see [Upgrading the JDK](#).

Applications compiled with JDK 7 are not supported on CDH 6. You must recompile your applications using JDK 8 before upgrading to CDH 6.

Oracle JDK 9 is not supported in any Cloudera Manager or CDH version.

Unless specifically excluded, Cloudera supports later updates to a major JDK release from the release that support was introduced. Cloudera excludes or removes support for select Java updates when security is jeopardized.

Running CDH nodes within the same cluster on different JDK releases is not supported. All cluster hosts must use the same JDK update level.

Supported JDKs

| Cloudera Enterprise Version | Supported Oracle JDK | Supported OpenJDK |
|------------------------------|----------------------|-----------------------|
| 5.3 -5.15 | 1.7, 1.8 | none |
| 5.16 and higher 5.x releases | 1.7, 1.8 | 1.8 |
| 6.0 | 1.8 | none |
| 6.1 | 1.8 | 1.8 |
| 6.2 | 1.8 | 1.8 |
| 6.3 | 1.8 | 1.8, 11.0.3 or higher |



Note:

See [additional information below](#) for recommended versions of JDK 1.8.

JDK 8

All JDK 8 updates, from the minimum required version, are supported in Cloudera Enterprise 6 unless specifically excluded. Updates above the minimum that are not listed are supported but not tested. JDK 8 is required for Cloudera Manager 6 and CDH 6.



Warning:

- JDK 8u271, JDK 8u281, and JDK 8u291 may cause socket leak issues due to JDK-8245417 and JDK-8256818. Pay attention to the build version of your JDK because some later builds are fixed as described in [JDK-8256818](#).

Workaround: Consider using a more recent version of the JDK like 8u282, or builds of the JDK where the issue is fixed.

- JDK 8u40, 8u45, and 8u60 are not supported due to JDK issues impacting CDH functionality:
 - JDK 8u40 and 8u45 are affected by [JDK-8077155](#), which affects HTTP authentication for certain web UIs.
 - JDK 8u60 is incompatible with the AWS SDK, and causes problem with DistCP. For more information, see the [KB article](#).
- [Oozie Workflow Graph Display](#) in Hue does not work properly with JDK versions lower than 8u40.



Important:

For JDK 8u241 and higher versions running on Kerberized clusters, you must disable referrals by setting `sun.security.krb5.disableReferrals=true`.

For example, with OpenJDK 1.8.0u242:

- Open `/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.242.b08-0.el7_7.x86_64/jre/lib/security/java.security` with a text editor.
- Add `sun.security.krb5.disableReferrals=true` (it can be at the bottom of the file).
- Add this property on each node that has the impacted JDK version.
- Restart the applications using the JDK so the change takes effect.

For more information, see the [KB article](#).

Table 9: Oracle JDK 8 versions that are tested and recommended

| Oracle JDK Version | Notes |
|--------------------|-------------------------------------|
| 1.8u181 | Recommended / Latest version tested |
| 1.8u162 | Recommended |
| 1.8u141 | Recommended |
| 1.8u131 | Recommended |
| 1.8u121 | Recommended |
| 1.8u111 | Recommended |

| Oracle JDK Version | Notes |
|--------------------|------------------|
| 1.8u102 | Recommended |
| 1.8u91 | Recommended |
| 1.8u74 | Recommended |
| 1.8u31 | Minimum required |

Table 10: OpenJDK 8 versions that are tested and recommended

| OpenJDK Version | Notes |
|-----------------|-------------------------------------|
| 1.8u212 | Recommended / Latest version tested |
| 1.8u181 | Minimum required |

Cloudera tests only the OpenJDK builds that are provided by each operating system, and only the versions listed in the table above.

JDK 7



Important: JDK 7 and lower are not supported in Cloudera Manager 6.x and CDH 6.x.

Networking and Security Requirements

CDH and Cloudera Manager Supported Transport Layer Security Versions

The following components are supported by the indicated versions of Transport Layer Security (TLS):

Table 11: Components Supported by TLS

| Component | Role | Name | Port | Version |
|------------------|-------------------------|---------------------------------------|-------|------------------|
| Cloudera Manager | Cloudera Manager Server | | 7182 | TLS 1.2 |
| Cloudera Manager | Cloudera Manager Server | | 7183 | TLS 1.2 |
| Flume | | | 9099 | TLS 1.2 |
| Flume | | Avro Source/Sink | | TLS 1.2 |
| Flume | | Flume HTTP Source/Sink | | TLS 1.2 |
| HBase | Master | HBase Master Web UI Port | 60010 | TLS 1.2 |
| HDFS | NameNode | Secure NameNode Web UI Port | 50470 | TLS 1.2 |
| HDFS | Secondary NameNode | Secure Secondary NameNode Web UI Port | 50495 | TLS 1.2 |
| HDFS | HttpFS | REST Port | 14000 | TLS 1.1, TLS 1.2 |
| Hive | HiveServer2 | HiveServer2 Port | 10000 | TLS 1.2 |
| Hue | Hue Server | Hue HTTP Port | 8888 | TLS 1.2 |

| Component | Role | Name | Port | Version |
|-----------|-----------------------|---------------------------------|-------|--|
| Impala | Impala Daemon | Impala Daemon Beeswax Port | 21000 | TLS 1.0, TLS 1.1, TLS 1.2 We recommend that clients use the highest supported version, TLS 1.2. |
| Impala | Impala Daemon | Impala Daemon HiveServer2 Port | 21050 | TLS 1.0, TLS 1.1, TLS 1.2 We recommend that clients use the highest supported version, TLS 1.2. |
| Impala | Impala Daemon | Impala Daemon Backend Port | 22000 | TLS 1.0, TLS 1.1, TLS 1.2 We recommend that clients use the highest supported version, TLS 1.2. |
| Impala | Impala StateStore | StateStore Service Port | 24000 | TLS 1.0, TLS 1.1, TLS 1.2 We recommend that clients use the highest supported version, TLS 1.2. |
| Impala | Impala Daemon | Impala Daemon HTTP Server Port | 25000 | TLS 1.0, TLS 1.1, TLS 1.2 We recommend that clients use the highest supported version, TLS 1.2. |
| Impala | Impala StateStore | StateStore HTTP Server Port | 25010 | TLS 1.0, TLS 1.1, TLS 1.2 We recommend that clients use the highest supported version, TLS 1.2. |
| Impala | Impala Catalog Server | Catalog Server HTTP Server Port | 25020 | TLS 1.0, TLS 1.1, TLS 1.2 We recommend that clients use the highest supported version, TLS 1.2. |
| Impala | Impala Catalog Server | Catalog Server Service Port | 26000 | TLS 1.0, TLS 1.1, TLS 1.2 We recommend that clients use the highest supported version, TLS 1.2. |
| Oozie | Oozie Server | Oozie HTTPS Port | 11443 | TLS 1.1, TLS 1.2 |
| Solr | Solr Server | Solr HTTP Port | 8983 | TLS 1.1, TLS 1.2 |
| Solr | Solr Server | Solr HTTPS Port | 8985 | TLS 1.1, TLS 1.2 |

| Component | Role | Name | Port | Version |
|-----------|-------------------|---|-------|---------|
| Spark | History Server | | 18080 | TLS 1.2 |
| YARN | ResourceManager | ResourceManager Web Application HTTP Port | 8090 | TLS 1.2 |
| YARN | JobHistory Server | MRv1 JobHistory Web Application HTTP Port | 19890 | TLS 1.2 |

CDH and Cloudera Manager Networking and Security Requirements

The hosts in a Cloudera Manager deployment must satisfy the following networking and security requirements:

- **Networking Protocols Support**

CDH requires IPv4. IPv6 is not supported and must be disabled.



Note: Contact your OS vendor for help disabling IPv6.

See also [Configure Network Names](#).

- **Multihoming Support**

Multihoming CDH or Cloudera Manager is not supported outside specifically certified Cloudera partner appliances. Cloudera finds that current Hadoop architectures combined with modern network infrastructures and security practices remove the need for multihoming. Multihoming, however, is beneficial internally in appliance form factors to take advantage of high-bandwidth InfiniBand interconnects.

Although some subareas of the product may work with unsupported custom multihoming configurations, there are known issues with multihoming. In addition, unknown issues may arise because multihoming is not covered by our test matrix outside the Cloudera-certified partner appliances.

- **Entropy**

Data at rest encryption requires sufficient [entropy](#) to ensure randomness.

See entropy requirements in [Data at Rest Encryption Requirements](#) on page 33.

- Cluster hosts must have a working network name resolution system and correctly formatted `/etc/hosts` file. All cluster hosts must have properly configured forward and reverse host resolution through DNS. The `/etc/hosts` files must:

- Contain consistent information about hostnames and IP addresses across all hosts
- Not contain uppercase hostnames
- Not contain duplicate IP addresses

Cluster hosts must not use aliases, either in `/etc/hosts` or in configuring DNS. A properly formatted `/etc/hosts` file should be similar to the following example:

```
127.0.0.1 localhost.localdomain localhost
192.168.1.1 cluster-01.example.com cluster-01
192.168.1.2 cluster-02.example.com cluster-02
192.168.1.3 cluster-03.example.com cluster-03
```

- In most cases, the Cloudera Manager Server must have SSH access to the cluster hosts when you run the installation or upgrade wizard. You must log in using a root account or an account that has password-less `sudo` permission. For authentication during the installation and upgrade procedures, you must either enter the password or upload a public and private key pair for the `root` or `sudo` user account. If you want to use a public and private key pair, the public key must be installed on the cluster hosts before you use Cloudera Manager.

Cloudera Manager uses SSH only during the initial install or upgrade. Once the cluster is set up, you can disable root SSH access or change the root password. Cloudera Manager does not save SSH credentials, and all credential information is discarded when the installation is complete.

- The Cloudera Manager Agent runs as `root` so that it can make sure that the required directories are created and that processes and files are owned by the appropriate user (for example, the `hdfs` and `mapred` users).
- Security-Enhanced Linux (SELinux) must not block Cloudera Manager or CDH operations.



Note: Cloudera Enterprise, with the exception of Cloudera Navigator Encrypt, is supported on platforms with Security-Enhanced Linux (SELinux) enabled and in `enforcing` mode. Cloudera is not responsible for SELinux policy development, support, or enforcement. If you experience issues running Cloudera software with SELinux enabled, contact your OS provider for assistance.

If you are using SELinux in `enforcing` mode, Cloudera Support can request that you disable SELinux or change the mode to `permissive` to rule out SELinux as a factor when investigating reported issues.

- Firewalls (such as `iptables` and `firewalld`) must be disabled or configured to allow access to [ports](#) used by Cloudera Manager, CDH, and related services.
- For RHEL and CentOS, the `/etc/sysconfig/network` file on each host must contain the correct hostname.
- Cloudera Manager and CDH use several user accounts and groups to complete their tasks. The set of user accounts and groups varies according to the components you choose to install. Do not delete these accounts or groups and do not modify their permissions and rights. Ensure that no existing systems prevent these accounts and groups from functioning. For example, if you have scripts that delete user accounts not in a whitelist, add these accounts to the list of permitted accounts. Cloudera Manager, CDH, and managed services create and use the following accounts and groups:

Table 12: Users and Groups

| Component (Version) | Unix User ID | Groups | Functionality |
|---------------------------------|---------------------------|---------------------------|--|
| Cloudera Manager (all versions) | <code>cloudera-scm</code> | <code>cloudera-scm</code> | Clusters managed by Cloudera Manager run Cloudera Manager Server, monitoring roles, and other Cloudera Server processes as <code>cloudera-scm</code> . Requires keytab file named <code>cmf.keytab</code> because name is hard-coded in Cloudera Manager. |
| Apache Accumulo | <code>accumulo</code> | <code>accumulo</code> | Accumulo processes run as this user. |
| Apache Flume | <code>flume</code> | <code>flume</code> | The sink that writes to HDFS as user must have write privileges. |
| Apache HBase | <code>hbase</code> | <code>hbase</code> | The Master and the RegionServer processes run as this user. |
| HDFS | <code>hdfs</code> | <code>hdfs, hadoop</code> | The NameNode and DataNodes run as this user, and the HDFS root directory as well as the directories used for edit logs should be owned by it. |
| Apache Hive | <code>hive</code> | <code>hive</code> | The HiveServer2 process and the Hive Metastore processes run as this user. A user must be defined for Hive access to its Metastore DB (for example, MySQL or Postgres) but it can be any identifier and does not correspond to a Unix uid. This is |

| Component (Version) | Unix User ID | Groups | Functionality |
|---------------------|-------------------------|-----------------------------|---|
| | | | <code>javax.jdo.option.ConnectionUserName</code> in <code>hive-site.xml</code> . |
| Apache HCatalog | <code>hive</code> | <code>hive</code> | The WebHCat service (for REST access to Hive functionality) runs as the <code>hive</code> user. |
| HttpFS | <code>httpfs</code> | <code>httpfs</code> | The HttpFS service runs as this user. See HttpFS Security Configuration for instructions on how to generate the merged <code>httpfs-http.keytab</code> file. |
| Hue | <code>hue</code> | <code>hue</code> | Hue services run as this user. |
| Hue Load Balancer | <code>apache</code> | <code>apache</code> | The Hue Load balancer has a dependency on the <code>apache2</code> package that uses the <code>apache</code> user name. Cloudera Manager does not run processes using this user ID. |
| Impala | <code>impala</code> | <code>impala, hive</code> | Impala services run as this user. |
| Apache Kafka | <code>kafka</code> | <code>kafka</code> | Kafka brokers and mirror makers run as this user. |
| Java KeyStore KMS | <code>kms</code> | <code>kms</code> | The Java KeyStore KMS service runs as this user. |
| Key Trustee KMS | <code>kms</code> | <code>kms</code> | The Key Trustee KMS service runs as this user. |
| Key Trustee Server | <code>keytrustee</code> | <code>keytrustee</code> | The Key Trustee Server service runs as this user. |
| Kudu | <code>kudu</code> | <code>kudu</code> | Kudu services run as this user. |
| MapReduce | <code>mapred</code> | <code>mapred, hadoop</code> | Without Kerberos, the JobTracker and tasks run as this user. The <code>LinuxTaskController</code> binary is owned by this user for Kerberos. |
| Apache Oozie | <code>oozie</code> | <code>oozie</code> | The Oozie service runs as this user. |
| Parquet | <code>~</code> | <code>~</code> | No special users. |
| Apache Pig | <code>~</code> | <code>~</code> | No special users. |
| Cloudera Search | <code>solr</code> | <code>solr</code> | The Solr processes run as this user. |
| Apache Spark | <code>spark</code> | <code>spark</code> | The Spark History Server process runs as this user. |
| Apache Sentry | <code>sentry</code> | <code>sentry</code> | The Sentry service runs as this user. |
| Apache Sqoop | <code>sqoop</code> | <code>sqoop</code> | This user is only for the Sqoop1 Metastore, a configuration option that is not recommended. |
| YARN | <code>yarn</code> | <code>yarn, hadoop</code> | Without Kerberos, all YARN services and applications run as this user. The <code>LinuxContainerExecutor</code> binary is owned by this user for Kerberos. |
| Apache ZooKeeper | <code>zookeeper</code> | <code>zookeeper</code> | The ZooKeeper processes run as this user. It is not configurable. |

Data at Rest Encryption Requirements

Encryption comprises several components, each with its own requirements.

Data at rest encryption protection can be applied at a number of levels within Hadoop:

- OS filesystem-level

- Network-level
- HDFS-level (protects both data at rest and in transit)

This section contains the various hardware and software requirements for all encryption products used for Data at Rest Encryption.

For more information on supported operating systems, see [Product Compatibility Matrix for Cloudera Navigator Encryption](#) on page 42.

For more information on the components, concepts, and architecture for encrypting data at rest, see [Encrypting Data at Rest](#).

Entropy Requirements

Cryptographic operations require [entropy](#) to ensure randomness.

You can check the available entropy on a Linux system by running the following command:

```
cat /proc/sys/kernel/random/entropy_avail
```

The output displays the entropy currently available. Check the entropy several times to determine the state of the entropy pool on the system. If the entropy is consistently low (500 or less), you must increase it by installing `rng-tools` and starting the `rngd` service. Run the following commands on RHEL 6-compatible systems:

```
sudo yum install rng-tools
sudo echo 'EXTRAOPTIONS="-r /dev/urandom"' >> /etc/sysconfig/rngd
sudo service rngd start
sudo chkconfig rngd on
```

For RHEL 7, run the following commands:

```
sudo yum install rng-tools
cp /usr/lib/systemd/system/rngd.service /etc/systemd/system/
sed -i -e 's/ExecStart=/sbin/rngd -f/ExecStart=/sbin/rngd -f -r \/dev\/urandom/'
/etc/systemd/system/rngd.service
systemctl daemon-reload
systemctl start rngd
systemctl enable rngd
```

Make sure that the hosts running Key Trustee Server, Key Trustee KMS, and Navigator Encrypt have sufficient entropy to perform cryptographic operations.

Cloudera Manager Requirements

Installing and managing Key Trustee Server using Cloudera Manager requires Cloudera Manager 5.4.0 and higher. Key Trustee Server does not require Cloudera Navigator Audit Server or Metadata Server.

umask Requirements

Key Trustee Server installation requires the default `umask` of `0022`.

Network Requirements

For new Key Trustee Server installations (5.4.0 and higher) and migrated upgrades (see [Migrate Apache Web Server to CherryPy](#) for more information), Key Trustee Server requires the following TCP ports to be opened for inbound traffic:

- 11371
Clients connect to this port over HTTPS.
- 11381 (PostgreSQL)
The passive Key Trustee Server connects to this port for database replication.

For upgrades that are not migrated to the CherryPy web server, the pre-upgrade port settings are preserved:

- 80
Clients connect to this port over HTTP to obtain the Key Trustee Server public key.
- 443 (HTTPS)
Clients connect to this port over HTTPS.
- 5432 (PostgreSQL)
The passive Key Trustee Server connects to this port for database replication.

TLS Certificate Requirements

To ensure secure network traffic, Cloudera recommends obtaining Transport Layer Security (TLS) certificates specific to the hostname of your Key Trustee Server. To obtain the certificate, generate a Certificate Signing Request (CSR) for the fully qualified domain name (FQDN) of the Key Trustee Server host. The CSR must be signed by a trusted Certificate Authority (CA). After the certificate has been verified and signed by the CA, the Key Trustee Server TLS configuration requires:

- The CA-signed certificate
- The private key used to generate the original CSR
- The intermediate certificate/chain file (provided by the CA)

Cloudera recommends not using self-signed certificates. If you use self-signed certificates, you must use the `--skip-ssl-check` parameter when registering Navigator Encrypt with the Key Trustee Server. This skips TLS hostname validation, which safeguards against certain network-level attacks. For more information regarding insecure mode, see [Table 1](#).

Browser Requirements

Cloudera Manager, Cloudera Navigator, and Hue are supported on the two most recent [LTS](#) (long term support) or [ESR](#) (extended support release) browsers. Cookies and JavaScript must be enabled.



Important: To see all icons in the Hue Web UI, users with IE and HTTPS must add a Load Balancer.

The following browser versions are the minimum tested versions of the most common browsers for Cloudera Manager version 6.x. Hue can display in older, and other browsers, but you might not have access to all of its features.

- **Chrome:** 63 ([Version history](#))
- **Firefox:** 59 ([Version history](#))
- **Safari** (Mac only): [Version history](#)
- **Internet Explorer:** 11 ([Version history](#))
- **Microsoft Edge:** 41 ([Version history](#))

Supported Configurations with Virtualization and Cloud Platforms

This section lists supported cloud and virtualization platforms for deploying Cloudera software. The linked reference architectures are not replacements for statements of support, but are guides to assist with deployment and sizing options.

Amazon Web Services

For information on deploying Cloudera software on a Amazon Web Services (AWS) cloud infrastructure, see the [Cloudera Enterprise Reference Architecture for AWS Deployments](#).

Google Cloud Platform

For information on deploying Cloudera software on a Google Cloud Platform infrastructure, see the [Cloudera Enterprise Reference Architecture for Google Cloud Platform Deployments](#).

Microsoft Azure

For information on deploying Cloudera software on a Microsoft Azure cloud infrastructure, see the [Cloudera Enterprise Reference Architecture for Azure Deployments](#).

Support Limitations for CDH and Cloudera Manager in Microsoft Azure

- Virtual machines must use Cloudera-published CentOS 6.x/7.x OS Images or Red Hat published 6.x/7.x Images. Red Hat images must include bootstrapped configuration as specified in the [Azure Bootstrap Scripts folder](#) in the Cloudera Director GitHub repository.
- Master Node Services *must use* Azure Premium Storage Disks for persistent storage.
- The VM local [temporary disk](#) *must not* be used for any persistent data for HDFS, Kudu, or other services.
- [Microsoft Azure Storage - Block Blob](#) (previously known as Windows Azure Storage Blob, accessed via wasb:// URI's) is only supported for backups using Hadoop's DistCP. Other services are not supported running directly against Azure Storage block blobs.

VMware

For information on deploying Cloudera software on a VMware-based infrastructure, see the [Reference architecture for deploying on VMware](#).

Recommendation when deploying on VMware in the current release:

- Use the part of Hadoop Virtual Extensions that has been implemented in [HADOOP-8468](#). This will prevent data loss when a physical node that hosts two or more DataNodes goes down.

Red Hat OpenStack Platform (OSP) 11

For information on deploying Cloudera software on RedHat OpenStack Platform (OSP) 11, see [Reference Architecture for Deploying CDH 5.x on Red Hat OSP 11](#).

For information on deploying Cloudera software on RedHat OpenStack Platform (OSP) 11 with Ceph storage, see [Reference Architecture for Deploying Cloudera Enterprise 5.x on Red Hat OpenStack Platform 11 with Red Hat Ceph Storage 2.x](#).

Product Compatibility Matrices

For more information on component compatibility across versions, see the following compatibility matrices:

Cloudera Manager and CDH Compatibility

Cloudera uses the following versioning convention: *<major>.<minor>.<maintenance>*. For example, if a cluster runs Cloudera Manager 6.0.0, the major version is 6, the minor version is 0, and the maintenance version is 0.

The Cloudera Manager *<major> + <minor>* version must always be equal to or greater than the CDH *<major> + <minor>* version. Older versions of Cloudera Manager might not support features in newer versions of CDH.

For example:

- Cloudera Manager 5.12.0 can manage CDH 5.12.2 because the *<minor>* versions are equal. Cloudera Manager 5.12.0 cannot manage CDH 5.14.0 because the Cloudera Manager *<minor>* version, 12, is less than the CDH *<minor>* version, 14.
- Cloudera Manager 6.x can manage clusters running CDH 5.7 up to CDH 5.16 and as long as the *<major> + <minor>* version of Cloudera Manager is equal or higher than the *<major> + <minor>* version of CDH.



Important: Using Cloudera Manager 6.0.x to manage a CDH 5.15.x or CDH 5.16 cluster is not a supported configuration.

For more information, see [Supported Upgrade Paths](#).

Product Compatibility Matrix for Apache Accumulo



Warning: Cloudera Manager cannot upgrade Apache Accumulo. Follow the instruction in [Apache Accumulo Installation Guide](#) to upgrade to a CDH 6 compatible Apache Accumulo version.

This matrix contains compatibility information across versions of Apache Accumulo, and CDH and Cloudera Manager. For detailed information on each release, see [Apache Accumulo documentation](#).

| Product | Lowest supported Cloudera Manager Version | Lowest supported CDH Version | Lowest supported Impala Version | Lowest supported Search Version | Integrated into CDH |
|-----------------------|---|------------------------------|---------------------------------|---------------------------------|---------------------|
| Accumulo 1.9.2 | Cloudera Manager 6.0.0 | CDH 6.0.0 | Not Supported | Not Supported | No |
| Accumulo 1.7.2 | Cloudera Manager 5.0.0 | CDH 5.5.0 | Not Supported | Not Supported | No |
| Accumulo 1.6.0 | Cloudera Manager 5.0.0 | CDH 4.6.0 | Not Supported | Not Supported | No |

Product Compatibility Matrix for Backup and Disaster Recovery

This matrix contains compatibility information across features of Cloudera Manager Backup and Disaster Recovery and CDH and Cloudera Manager.

| Feature | Lowest supported Cloudera Manager Version | Lowest supported CDH Version | Supported Services |
|--|---|------------------------------|--------------------|
| Replication | Cloudera Manager 5.0.0 | CDH 5.0.0 | HDFS, Hive, Impala |
| Replication to and from Amazon S3* | Cloudera Manager 5.9.0 | CDH 5.9.0 | HDFS, Hive, Impala |
| Snapshots | Cloudera Manager 5.0.0 | CDH 5.0.0 | HDFS, Hive, Impala |
| Snapshots from Isilon storage | Not Supported | Not Supported | HDFS, Hive, Impala |
| Replication to and from Microsoft ADLS Gen1 | Cloudera Manager 6.1.0 or Cloudera Manager 5.15.0 | CDH 5.15 | HDFS, Hive, Impala |
| Replication to and from Microsoft ADLS Gen2 (ABFS) | Cloudera Manager 6.2.0 | CDH 6.1.0 | HDFS, Hive, Impala |

*BDR does not support S3 as a source or destination when S3 is configured to use SSE-KMS.

Starting in Cloudera Manager 6.1.0, BDR ignores Hive tables backed by Kudu during replication. The change does not affect functionality since BDR does not support tables backed by Kudu. This change was made to guard against data loss due to how the Hive Metastore, Impala, and Kudu interact.

Supported Replication Scenarios

Versions

To replicate data to or from clusters managed by Cloudera Manager 6, the source or destination cluster must be managed by Cloudera Manager 5.14.0 or higher. Note that some functionality may not be available in Cloudera Manager 5.14.0 and higher or 6.0.0 and higher.

Kerberos

BDR supports the following replication scenarios when Kerberos authentication is used on a cluster:

- Secure source to a secure destination.

- Insecure source to an insecure destination.
- Insecure source to a secure destination. Keep the following requirements in mind:
 - In replication scenarios where a destination cluster has multiple source clusters, all the source clusters must either be secure or insecure. BDR does not support replication from a mixture of secure and insecure source clusters.
 - The destination cluster must run Cloudera Manager 6.1.0 or higher.
 - The source cluster must run a compatible Cloudera Manager version.
 - This replication scenario requires additional configuration. For more information, see [Replicating from Insecure to Secure Clusters](#) for Hive and [Replicating from Insecure to Secure Clusters](#) for HDFS.

Cloud Storage

BDR supports replicating to or from Amazon S3 and Microsoft Azure ADLS Gen1 and Microsoft Azure ADLS Gen2 (ABFS).

TLS

You can use TLS with BDR. Additionally, BDR supports replication scenarios where TLS is enabled for non-Hadoop services (Hive/Impala) and TLS is disabled Hadoop services (such as HDFS, YARN, and MapReduce).

Hive replication

Hive replication to and from Microsoft ADLS Gen2 (ABFS) is supported from Cloudera Manager 6.3.4.

Ensure that the following files are available before you replicate Hive data:

1. cp
/opt/cloudera/parcels/CDH-6.3.4-1.cdh6.3.4.px.xxxxxx/jars/wildfly-openssl-1.0.4.Final.jar
/opt/cloudera/cm/lib/cdh6/
2. cp
/opt/cloudera/parcels/CDH-6.3.4-1.cdh6.3.4.px.xxxxxx/jars/hadoop-azure-3.0.0-cdh6.3.4.jar
/opt/cloudera/cm/lib/cdh6/
3. chmod 644 /opt/cloudera/cm/lib/cdh6/wildfly-openssl-1.0.4.Final.jar
4. chmod 644 /opt/cloudera/cm/lib/cdh6/hadoop-azure-3.0.0-cdh6.3.4.jar
5. service cloudera-scm-server restart

Unsupported Replication Scenarios



Note: If you are using Isilon storage for CDH, see [Supported Replication Scenarios for Clusters using Isilon Storage](#) on page 38.

Versions

Replicating to or from Cloudera Manager 6 managed clusters with Cloudera Manager versions earlier than 5.14.0 are not supported.

Kerberos

BDR does not support the following replication scenarios when Kerberos authentication is used on a cluster:

- Secure source to an insecure destination is not supported.

General

BDR does not support Hadoop Archive (HAR file system) for data replication.

Supported Replication Scenarios for Clusters using Isilon Storage



Warning: Dell EMC Isilon is supported only on CDH 6.3.1 and higher.

Note the following when scheduling replication jobs for clusters that use Isilon storage:

- As of CDH 5.8 and higher, Replication is supported for clusters using Kerberos and Isilon storage on the source or destination cluster, or both. See [Configuring Replication with Kerberos and Isilon](#). Replication between clusters using Isilon storage and Kerberos is not supported in CDH 5.7.
- Make sure that the `hdfs` user is a superuser in the Isilon system. If you specify alternate users with the **Run As** option when creating replication schedules, those users must also be superusers.
- Cloudera recommends that you use the Isilon `root` user for replication jobs. (Specify `root` in the **Run As** field when creating replication schedules.)
- Select the **Skip checksum checks** property when creating replication schedules.
- Clusters that use Isilon storage do not support [snapshots](#). Snapshots are used to ensure data consistency during replications in scenarios where the source files are being modified. Therefore, when replicating from an Isilon cluster, Cloudera recommends that you do not replicate Hive tables or HDFS files that could be modified before the replication completes.

See [Using CDH with Isilon Storage](#).

Product Compatibility Matrix for Cloudera Data Science Workbench

Cloudera Data Science Workbench is a product that enables fast, easy, and secure self-service data science for the enterprise. It allows data scientists to bring their existing skills and tools, such as R, Python, and Scala, to securely run computations on data in Hadoop clusters.

For details about platform requirements for Cloudera Data Science Workbench, refer the [CDSW Requirements and Supported Platforms](#) topic.

Product Compatibility for Dell EMC Isilon



Warning: Dell EMC Isilon is supported only on CDH 6.3.1 and higher.

For compatibility with Cloudera Manager Replication and Snapshot features, see [Product Compatibility Matrix for Backup and Disaster Recovery](#) on page 37. See [Using CDH with Isilon Storage](#).

| CDH Version | Isilon OneFS Version |
|------------------|---|
| 6.3.1 and higher | <ul style="list-style-type: none"> • OneFS-8.2.0 |

Product Compatibility Matrix for Cloudera Navigator

This matrix contains compatibility information across versions of Cloudera Navigator, Cloudera Manager, and CDH. For detailed information on each release, see [Cloudera Navigator documentation](#). For details on services supported by Navigator in the latest release, see:

- Audit: [Operations by Component](#)
- Metadata: [Service Metadata Entity Types](#)



Note:

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

| Product | Feature | Lowest supported Cloudera Manager Version | Lowest supported CDH Version |
|---|---|---|---|
| Cloudera Navigator 6.0.x, 6.1.x, 6.2.x, 6.3.x | Auditing, Metadata, Analytics, and Security | Same as Cloudera Navigator | <ul style="list-style-type: none"> • Audit Component |

| Product | Feature | Lowest supported Cloudera Manager Version | Lowest supported CDH Version |
|---------|---------|---|--|
| | | | <ul style="list-style-type: none"> – CDH 5.4, including HDFS, HBase, Hue, HiveServer2, Impala, Sentry, and Solr • Metadata Component <ul style="list-style-type: none"> – CDH 5.4, including HDFS, HiveServer2, Impala, MapReduce, Oozie, Pig, Sqoop 1, Spark 1 (1.6), YARN – CDH 6.0, including HDFS, HiveServer2, Impala, MapReduce, Oozie, Pig, S3, Spark 1 (1.6) and Spark 2 (2.3), Sqoop 1, YARN |

Cloudera Navigator Supported Databases

Cloudera Navigator supports the same databases as CDH and Cloudera Manager. For more information, see [Database Requirements](#) on page 24.

Cloudera Navigator Supported Browsers

See [Browser Requirements](#) on page 35.

Cloudera Navigator Supported CDH and Managed Service Versions

This section describes the CDH and managed service versions supported by the Cloudera Navigator auditing and metadata features.

Cloudera Navigator Auditing

This section describes the audited operations and service versions supported by Cloudera Navigator auditing.

| Component | Operations (For details, see Service Audit Events). | Minimum Supported Service Version |
|--|--|-----------------------------------|
| Virtual Private Clusters | <ul style="list-style-type: none"> • All operations supported on standard clusters | CM 6.3.0 |
| HDFS | <ul style="list-style-type: none"> • Operations that access or modify a file's or directory's data or metadata • Operations denied due to lack of privileges | CDH 5.0.0 |
| HBase | <ul style="list-style-type: none"> • In simple authentication mode, if the HBase Secure RPC Engine property is <code>false</code> (the default), the username in log events is <code>UNKNOWN</code>. To see a meaningful username: <ol style="list-style-type: none"> 1. Click the HBase service. 2. Click the Configuration tab. 3. Select Service-wide > Security. 4. Set the HBase Secure RPC Engine property to <code>true</code>. 5. Save the change and restart the service. | CDH 5.0.0 |

| Component | Operations (For details, see Service Audit Events). | Minimum Supported Service Version |
|-----------|--|-----------------------------------|
| Hive | <ul style="list-style-type: none"> Operations (except grant, revoke, and metadata access only) sent to HiveServer2 Operations denied due to lack of privileges <p>Limitations:</p> <ul style="list-style-type: none"> Actions taken against Hive using the Hive CLI are <i>not</i> audited. Therefore if you have enabled auditing you should disable the Hive CLI to prevent actions against Hive that are not audited. In simple authentication mode, the username in log events is the username passed in the HiveServer2 connect command. If you do not pass a username in the connect command, the username in log events is anonymous. | CDH 5.0.0 |
| Hue | <ul style="list-style-type: none"> Operations (except grant, revoke, and metadata access only) sent through the Beeswax Server | CDH 5.0.0 |
| | <ul style="list-style-type: none"> User operations such as log in, log out, add and remove user, add and remove LDAP group, add and remove user from LDAP group | CDH 5.5.0 |
| Impala | <ul style="list-style-type: none"> Queries denied due to lack of privileges Queries that pass analysis | CDH 5.0.0 |
| Sentry | <ul style="list-style-type: none"> Operations sent to the HiveServer2 and Hive Metastore Server roles and Impala service Adding and deleting roles, assigning roles to groups and removing roles from groups, creating and deleting privileges, granting and revoking privileges Operations denied due to lack of privileges <p>You do not directly configure the Sentry service for auditing. Instead, when you configure the Hive and Impala services for auditing, grant, revoke, and metadata operations appear in the Hive or Impala service audit logs.</p> | CDH 5.1.0 |
| Solr | <ul style="list-style-type: none"> Index creation and deletion Schema and configuration file modification Index, service, document tag access | CDH 5.4.0 |

Cloudera Navigator Metadata

This section describes the CDH and managed service versions supported by the Cloudera Navigator metadata feature.

| Component | Minimum Supported Version |
|--|---------------------------|
| HDFS. However, federated HDFS is <i>not supported</i> . | CDH 5.0.0 |
| HiveServer2 | CDH 5.0.0 |
| Impala | CDH 5.4.0 |
| MapReduce (v1 or v2) | CDH 5.0.0 |
| <p>Oozie. Supported actions:</p> <ul style="list-style-type: none"> 2.4 - map-reduce, pig, hive, hive2, sqoop 2.3 and lower - map-reduce, pig, hive, sqoop <p>Unsupported actions include email, shell, and ssh.</p> | CDH 5.0.0 |

| Component | Minimum Supported Version |
|---|---------------------------------|
| Pig | CDH 5.0.0 |
| Spark | CDH 5.4.0 |
| Spark 2 | CDH 5.8.0, Cloudera Manager 6.0 |
| Sqoop 1. All Cloudera connectors are supported. | CDH 5.0.0 |
| YARN | CDH 5.0.0 |

Product Compatibility Matrix for Cloudera Navigator Encryption

Cloudera Navigator encryption comprises several components.

See below for the individual compatibility matrices for each component:

Cloudera Navigator Key Trustee Server

Because of a change in the ports used by Key Trustee Server, Navigator Encrypt versions lower than 3.7 and Key Trustee KMS versions lower than 5.4 are not supported in Key Trustee Server 5.4 and higher.

Key Trustee Server: Recommended Hardware and Supported Distributions

Recommended Hardware and Supported Distributions

Key Trustee Server must be installed on a dedicated server or virtual machine (VM) that is not used for any other purpose. The backing PostgreSQL database must be installed on the same host as the Key Trustee Server, and must not be shared with any other services. For high availability, the active and passive Key Trustee Servers must not share physical resources. See [Resource Planning for Data at Rest Encryption](#) for more information.

The recommended minimum hardware specifications are as follows:

- Processor: 1 GHz 64-bit quad core
- Memory: 8 GB RAM
- Storage: 20 GB on moderate- to high-performance disk drives

Table 13: Cloudera Navigator Key Trustee Server Compatibility Matrix

| Cloudera Navigator Key Trustee Server Version | Supported Operating Systems | Lowest Supported Cloudera Manager Version | Lowest Supported Cloudera Navigator Key HSM Versions | Supported Cloudera Navigator Key Trustee KMS Versions | Supported Cloudera Navigator Encrypt Versions |
|---|--|---|--|---|---|
| 6.1.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.9, 7.8, 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • Oracle Linux: 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 | 6.1.x | 6.1.x | 6.0.x, 6.1.x | 6.0.x, 6.1.x |
| 6.0.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.9, 6.8 | 6.0.x | 6.0.x | 6.0.x | 6.0.x |

| Cloudera Navigator Key Trustee Server Version | Supported Operating Systems | Lowest Supported Cloudera Manager Version | Lowest Supported Cloudera Navigator Key HSM Versions | Supported Cloudera Navigator Key Trustee KMS Versions | Supported Cloudera Navigator Encrypt Versions |
|---|--|---|--|---|---|
| | <ul style="list-style-type: none"> • Oracle Linux: 7.4, 7.3, 7.2, 6.9, 6.8 | | | | |

Cloudera Navigator Key Trustee KMS

Key Trustee KMS: Recommended Hardware and Supported Distributions

The recommended minimum hardware specifications are as follows:

- Processor: 2 GHz 64-bit quad core
- Memory: 16 GB RAM
- Storage: 40 GB on moderate- to high-performance disk drives

The Key Trustee KMS workload is CPU-intensive. Cloudera recommends using machines with capabilities equivalent to your NameNode hosts, with Intel CPUs that support [AES-NI](#) for optimum performance. Also, Cloudera strongly recommends that you enable TLS for both the HDFS and the Key Trustee KMS services to prevent the passage of plain text key material between the KMS and HDFS data nodes.

Table 14: Cloudera Navigator Key Trustee KMS Compatibility Matrix

| Cloudera Navigator Key Trustee KMS Version | Supported Operating Systems | Supported Key Trustee Server Versions | Lowest Supported Cloudera Manager Version | Supported CDH Versions |
|--|--|---------------------------------------|---|----------------------------|
| 6.3.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.9, 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • Oracle Linux: 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • SLES: 12 SP3, 12 SP2 • Ubuntu: 16.04 (Xenial), 18 (Bionic) | 6.1.x, 6.0.x | 6.3.x | 6.3.x, 6.2.x, 6.1.x, 6.0.x |
| 6.2.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • Oracle Linux: 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • SLES: 12 SP3, 12 SP2 • Ubuntu: 16.04 (Xenial), 18 (Bionic) | 6.2.x, 6.1.x, 6.0.x | 6.2.x | 6.2.x, 6.1.x, 6.0.x |

| Cloudera Navigator Key Trustee KMS Version | Supported Operating Systems | Supported Key Trustee Server Versions | Lowest Supported Cloudera Manager Version | Supported CDH Versions |
|--|--|---------------------------------------|---|------------------------|
| 6.1.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • Oracle Linux: 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • SLES: 12 SP3, 12 SP2 • Ubuntu: 16.04 (Xenial) | 6.1.x, 6.0.x | 6.1.x | 6.1.x, 6.0.x |
| 6.0.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.9, 6.8 • Oracle Linux: 7.4, 7.3, 7.2, 6.8 • SLES: 12 SP3, 12 SP2 • Ubuntu: 16.04 LTS (Xenial) | 6.0.x | 6.0.x | 6.0.x |

Cloudera Navigator HSM KMS

Navigator HSM KMS: Recommended Hardware and Supported Distributions

The recommended minimum hardware specifications are as follows:

- Processor: 2 GHz 64-bit quad core
- Memory: 16 GB RAM
- Storage: 40 GB on moderate- to high-performance disk drives

Supported HSM devices:

- SafeNet Luna
 - HSM software version: 6.2.2-5
 - HSM firmware version: 6.10.9
 - Client: 6.2.2
- Thales nSolo, nConnect
 - Server version: 3.67.11cam4
 - Firmware: 2.65.2
 - Security World Version: 12.30

Table 15: HSM KMS Compatibility Matrix

| HSM KMS Version | Supported Operating Systems | Lowest Supported Cloudera Manager Version | Supported CDH Versions |
|-----------------|---|---|----------------------------|
| 6.3.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 | 6.3.x | 6.3.x, 6.2.x, 6.1.x, 6.0.x |
| 6.2.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 | 6.2.x | 6.2.x, 6.1.x, 6.0.x |
| 6.1.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 | 6.1.x | 6.1.x, 6.0.x |
| 6.0.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.5, 7.4, 7.3, 7.2, 6.9, 6.8 | 6.0.x | 6.0.x |

Cloudera Navigator Key HSM

Cloudera Navigator Key HSM must be installed on the same host as Key Trustee Server. Although Key HSM is compatible across all versions of Key Trustee Server, Cloudera strongly recommends also upgrading Key HSM after you upgrade Key Trustee Server.

Key HSM: Recommended Hardware and Supported Distributions

The following are prerequisites for installing Navigator Key HSM:

- Oracle Java Runtime Environment (JRE) 8 or higher with Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files:

- [JCE for Java SE 8](#)



Note: JDK 1.8u161 and higher enable unlimited strength encryption by default, and do not require policy files.

- OpenJDK 11



Note: The Thales JCE libraries do not support Java 11, so running Key HSM with Thales on OpenJDK 11 is unsupported.

- A supported HSM device:
 - Thales (formerly Safenet) Luna
 - v6
 - HSM firmware version: 6.2.1
 - HSM software version: 5.2.3-1
 - v7
 - HSM firmware version: 7.0.3
 - HSM software version: 7.2.0
 - SafeNet KeySecure

- HSM firmware version: 6.2.1
- HSM software version: 8.0.1, 8.1.0, 8.7.0
- Thales nSolo, nConnect
 - HSM firmware version: 11.4.0
 - Client software version: 2.28.9cam136



Note: Thales Key HSM is unsupported because the Thales client Java libraries do not support Java 11.

- AWS CloudHSM
 - Client software version: 1.1.1
- Key Trustee Server 3.8 or higher



Important: You must install Key HSM on the same host as Key Trustee Server.

Root access is required to install Navigator Key HSM.

Table 16: Cloudera Navigator Key HSM Compatibility Matrix

| Cloudera Navigator Key HSM Version | Supported Operating Systems | Lowest Supported Key Trustee Server Version |
|------------------------------------|---|---|
| 6.3.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 | 6.1.x, 6.0.x |
| 6.1.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 | 6.1.x, 6.0.x |
| 6.0.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.6, 7.5, 7.4, 7.3, 7.2, 6.9, 6.8 | 6.0.x |

Cloudera Navigator Encrypt



Note: Cloudera Enterprise, with the exception of Cloudera Navigator Encrypt, is supported on platforms with Security-Enhanced Linux (SELinux) enabled and in `enforcing` mode. Cloudera is not responsible for SELinux policy development, support, or enforcement. If you experience issues running Cloudera software with SELinux enabled, contact your OS provider for assistance.

If you are using SELinux in `enforcing` mode, Cloudera Support can request that you disable SELinux or change the mode to `permissive` to rule out SELinux as a factor when investigating reported issues.

Supported command-line interpreters:

- `sh` (Bourne)
- `bash` (Bash)
- `dash` (Ubuntu)



Note: Navigator Encrypt does not support installation or use in `chroot` environments.

Network Requirements

For new Navigator Key Trustee Server installations, Navigator Encrypt initiates TCP traffic over port 11371 (HTTPS) to the Key Trustee Server.

For upgrades, Navigator Encrypt initiates TCP traffic over ports 80 (HTTP) and 443 (HTTPS) to the Navigator Key Trustee Server.

Internet Access

You must have an active connection to the Internet to download many package dependencies, unless you have internal repositories or mirrors containing the dependent packages.

Maintenance Window

Data is not accessible during the encryption process. Plan for system downtime during installation and configuration.

Administrative Access

To enforce a high level of security, all Navigator Encrypt commands require administrative (root) access (including installation and configuration). If you do not have administrative privileges on your server, contact your system administrator before proceeding.

Package Dependencies

Navigator Encrypt requires these packages, which are resolved by your distribution package manager during installation:

- dkms
- keyutils
- ecryptfs-utils
- libkeytrustee
- navencrypt-kernel-module
- openssl
- lsof
- gcc
- cryptsetup

These packages may have other dependencies that are also resolved by your package manager. Installation works with gcc, gcc3, and gcc4.

Table 17: Cloudera Navigator Encrypt Compatibility Matrix

| Cloudera Navigator Encrypt Version | Supported Operating Systems | Supported Key Trustee Server Versions |
|------------------------------------|---|---|
| 6.2.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.8*, 7.7*, 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • Oracle Linux: 7.7*, 7.6, 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • SLES: 12 SP2, SP3 • Ubuntu: 16.04 LTS (Xenial), 18 (Bionic) | 6.2.x, 6.1.x, 6.0.x * Navigator Encrypt 6.2.1 only |
| 6.1.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • Oracle Linux: 7.5, 7.4, 7.3, 7.2, 6.10, 6.9, 6.8 • SLES: 12 SP2, SP3 | 6.1.x, 6.0.x |

| Cloudera Navigator Encrypt Version | Supported Operating Systems | Supported Key Trustee Server Versions |
|------------------------------------|---|---------------------------------------|
| | <ul style="list-style-type: none"> • Ubuntu: 16.04 LTS (Xenial) | |
| 6.0.x | <ul style="list-style-type: none"> • RHEL and CentOS: 7.5, 7.4, 7.3, 7.2, 6.9, 6.8 • Oracle Linux: 7.4, 7.3, 7.2, 6.9, 6.8 • SLES: 12 SP2, SP3 • Ubuntu: 16.04 LTS (Xenial) | 6.0.x |

Version, Packaging, and Download Information

Version and download information for Cloudera Manager, CDH, Impala, and Search can be found in the HTML documentation on the website at [Cloudera Documentation](#). Select the release version number and go to the HTML version of the Release Guide.



Important: As of February 1, 2021, all downloads of CDH and Cloudera Manager require a username and password and use a modified URL. You must use the modified URL, including the username and password when downloading the repository contents described below. You may need to upgrade Cloudera Manager to a newer version that uses the modified URLs.

This can affect new installations, upgrades, adding new hosts to a cluster, adding a cluster and adding new services to a cluster.

For more information, see [Updating an existing CDH/Cloudera Manager deployment to access downloads with authentication](#) on page 284.

Cloudera Manager 6 Version and Download Information

Cloudera Manager is available in the following releases:

- Cloudera Manager 6.3.4 is the current release of Cloudera Manager.
- Cloudera Manager 6.3.3 is the previous release of Cloudera Manager.

The 64-bit packages listed here support both Cloudera Express with its extensive set of monitoring and management features, and Cloudera Enterprise with additional functionality. A 60-day trial can be enabled to provide access to the full set of Cloudera Enterprise Cloudera Enterprise features. Cloudera Enterprise can be enabled permanently with the appropriate license. To obtain a Cloudera Enterprise license, fill in this [form](#) or call 866-843-7207.



Important: As of February 1, 2021, all downloads of CDH and Cloudera Manager require a username and password and use a modified URL. You must use the modified URL, including the username and password when downloading the repository contents described below. You may need to upgrade Cloudera Manager to a newer version that uses the modified URLs.

This can affect new installations, upgrades, adding new hosts to a cluster, adding a cluster and adding new services to a cluster.

For more information, see [Updating an existing CDH/Cloudera Manager deployment to access downloads with authentication](#) on page 284.

Authentication to the Cloudera Archive

As of February 1, 2021, access to Cloudera Manager binaries for production purposes requires authentication. To access the binaries at the locations below, you must first have an active subscription agreement and obtain a license key file along with the required authentication credentials (username and password).

The license key file and authentication credentials are provided in an email sent to customer accounts from Cloudera when a new license is issued. If you have an existing license with a Cloudera Enterprise entitlement, you might not have received an email. In this instance you can identify the authentication credentials from the license key file. If you do not have access to the license key, contact your account representative to receive a copy.

To identify your authentication credentials using your license key file, complete the following steps:

- From cloudera.com, log into the cloudera.com account associated with the Cloudera Enterprise license and subscription agreement.
- On the

<https://cloudera.com/downloads/cdh.html>

Cloudera CDH Download page, select the version that you want to install and click **Get It Now!**.

- Scroll down to the Credentials Generator at the bottom of the page.
- In the **Generate Credentials** text box, copy and paste the text of the “PGP Signed Message” within your license key file and click **Get Credentials**. The credentials generator returns your username and password.



Note: Take note of the authentication credentials. You might need them during installation to complete tasks such as configuring a remote or local package repository, or installing Cloudera Manager packages using a package manager such as YUM, APT, or other tools that you might be using in your environment.

When you obtain your authentication credentials, use them to form the URLs below, where you can access the Cloudera Manager repository in the Cloudera Archive.

Cloudera Manager 6.3.4

Release Date: October 30, 2020

Documentation:

- [Cloudera Manager 6.3.4 Release Notes](#) on page 297
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)



Note: This version of Cloudera Manager has been modified to manage clusters using the new download locations that require authentication.

Table 18: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|--|---|
| RHEL 7 Compatible | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/redhat7/yum/</pre> | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/redhat7/yum/ cloudera-manager.repo</pre> |
| RHEL6 Compatible | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/redhat6/yum/</pre> | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/redhat6/yum/ cloudera-manager.repo</pre> |
| SLES 12 | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/sles12/yum</pre> | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/sles12/yum/ cloudera-manager.repo</pre> |
| Ubuntu Xenial (18.04) | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/ubuntu1804/ apt/</pre> | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/ubuntu1804/ apt/cloudera-manager.list</pre> |
| Ubuntu Xenial (16.04) | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/ubuntu1604/ apt/</pre> | <pre>https:// <username>:<password>@archive.cloudera.com/ p/cm6/6.3.4/ubuntu1604/ apt/cloudera.manager.list</pre> |

Cloudera Manager 6.3.3

Release Date: February 3, 2020

Documentation:

- [Cloudera Manager 6.3.3 Release Notes](#) on page 302
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)



Note: This version of Cloudera Manager has been modified to manage clusters using the new download locations that require authentication.

Table 19: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|--|---|
| RHEL 7 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.3/redhat7/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.3/redhat7/yum/ cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.3/redhat6/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/redhat6/6.3.3/yum/ cloudera-manager.repo</code> |
| SLES 12 | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.3/sles12/yum</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.3/sles12/yum/ cloudera-manager.repo</code> |
| Ubuntu Xenial (18.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.3/ubuntu1804/ apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.3/ubuntu1804/ apt/cloudera-manager.list</code> |
| Ubuntu Xenial (16.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.3/ubuntu1604/ apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.3/ubuntu1604/ apt/cloudera.manager.list</code> |

Cloudera Manager 6.3.1

Release Date: October 11, 2019**Documentation:**

- [Cloudera Manager 6.3.1 Release Notes](#) on page 306
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)

Table 20: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|---|--|
| RHEL 7 Compatible | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/redhat7/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/redhat7/yum/cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/redhat6/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/redhat6/yum/cloudera-manager.repo</code> |
| SLES 12 | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/sles12/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/sles12/yum/cloudera-manager.repo</code> |
| Ubuntu Xenial (18.04) | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/ubuntu1804/apt/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/ubuntu1804/apt/cloudera-manager.list</code> |
| Ubuntu Xenial (16.04) | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/ubuntu1604/apt/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.1/ubuntu1604/apt/cloudera-manager.list</code> |

Cloudera Manager 6.3.1

Release Date: October 11, 2019

Documentation:

- [Cloudera Manager 6.3.1 Release Notes](#) on page 306
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)

Table 21: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|--|---|
| RHEL 7 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/redhat7/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/redhat7/yum/ cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/redhat6/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/redhat6/yum/ cloudera-manager.repo</code> |
| SLES 12 | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/sles12/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/sles12/yum/ cloudera-manager.repo</code> |
| Ubuntu Xenial (18.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/ubuntu1804/ apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/ubuntu1804/ apt/cloudera-manager.list</code> |
| Ubuntu Xenial (16.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/ubuntu1604/ apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.3.1/ubuntu1604/ apt/cloudera-manager.list</code> |

Cloudera Manager 6.3.0

Release Date: July 31, 2019

Documentation:

- [Cloudera Manager 6.3.0 Release Notes](#) on page 309
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)

Table 22: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|---|--|
| RHEL 7 Compatible | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.0/redhat7/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.0/redhat7/yum/cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.0/redhat6/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.0/redhat6/yum/cloudera-manager.repo</code> |
| SLES 12 | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.0/sles12/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.0/sles12/yum/cloudera-manager.repo</code> |
| Ubuntu Xenial (18.04) | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.0/ubuntu1804/apt/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.0/ubuntu1804/apt/cloudera-manager.list</code> |
| Ubuntu Xenial (16.04) | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.3.0/ubuntu1604/apt/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.0/ubuntu1604/apt/cloudera-manager.list</code> |

Cloudera Manager 6.2.1.4505

Release Date: February 1, 2021

Documentation:

- [Cloudera Manager 6.2.1 Release Notes](#) on page 318
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)



Note: This version of Cloudera Manager has been modified to manage clusters using the new download locations that require authentication.

Table 23: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|---|---|
| RHEL 7 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/redhat7/ yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/redhat7/ yum/cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/redhat6/ yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/redhat6/ yum/cloudera-manager.repo</code> |
| SLES 12 | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/sles12/ yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/sles12/ yum/cloudera-manager.repo</code> |
| Ubuntu Xenial (18.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/ ubuntu1804/apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/ ubuntu1804/apt/ cloudera-manager.list</code> |
| Ubuntu Xenial (16.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/ ubuntu1604/apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.1.4505/ ubuntu1604/apt/ cloudera-manager.list</code> |

Cloudera Manager 6.2.1

Release Date: September 18, 2019

Documentation:

- [Cloudera Manager 6.2.1 Release Notes](#) on page 318
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)

Table 24: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|---|--|
| RHEL 7 Compatible | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/redhat7/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/redhat7/yum/cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/redhat6/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/redhat6/yum/cloudera-manager.repo</code> |
| SLES 12 | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/sles12/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/sles12/yum/cloudera-manager.repo</code> |
| Ubuntu Xenial (18.04) | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/ubuntu1804/apt/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/ubuntu1804/apt/cloudera-manager.list</code> |
| Ubuntu Xenial (16.04) | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/ubuntu1604/apt/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.2.1/ubuntu1604/apt/cloudera-manager.list</code> |

Cloudera Manager 6.2.0

Release Date: March 29, 2019

Documentation:

- [Cloudera Manager 6.2.0 Release Notes](#) on page 322
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)

Table 25: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|--|---|
| RHEL 7 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/redhat7/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/redhat7/yum/ cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/redhat6/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/redhat6/yum/ cloudera-manager.repo</code> |
| SLES 12 | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/sles12/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/sles12/yum/ cloudera-manager.repo</code> |
| Ubuntu Xenial (18.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/ubuntu1804/ apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/ubuntu1804/ apt/cloudera-manager.list</code> |
| Ubuntu Xenial (16.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/ubuntu1604/ apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.2.0/ubuntu1604/ apt/cloudera-manager.list</code> |

Cloudera Manager 6.1.1.4505

Release Date: February 1, 2021**Documentation:**

- [Cloudera Manager 6.1.1 Release Notes](#) on page 333
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)



Note: This version of Cloudera Manager has been modified to manage clusters using the new download locations that require authentication.

Table 26: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|--|---|
| RHEL 7 Compatible | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.1.1.4505/redhat7/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.1.1.4505/redhat7/yum/cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.1.1.4505/redhat6/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.1.1.4505/redhat6/yum/cloudera-manager.repo</code> |
| SLES 12 | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.1.1.4505/sles12/yum/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.1.1.4505/sles12/yum/cloudera-manager.repo</code> |
| Ubuntu Xenial (16.04) | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.1.1.4505/ubuntu1604/apt/</code> | <code>https://<username>:password@archive.cloudera.com/p/cm6/6.1.1.4505/ubuntu1604/apt/cloudera-manager.list</code> |

Cloudera Manager 6.1.1

Release Date: February 20, 2019

Documentation:

- [Cloudera Manager 6.1.1 Release Notes](#) on page 333
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)

Table 27: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|--|---|
| RHEL 7 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.1.1/redhat7/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.1.1/redhat7/yum/ cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.1.1/redhat6/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.1.1/redhat6/yum/ cloudera-manager.repo</code> |
| SLES 12 | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.1.1/sles12/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.1.1/sles12/yum/ cloudera-manager.repo</code> |
| Ubuntu Xenial (16.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.1.1/ubuntu1604/ apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.1.1/ubuntu1604/ apt/cloudera-manager.list</code> |

Cloudera Manager 6.1.0

Release Date: December 18, 2018**Documentation:**

- [Cloudera Manager 6.1.0 Release Notes](#) on page 336
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)

Table 28: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|---|--|
| RHEL 7 Compatible | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.1.0/redhat7/yum/</code> | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.1.0/redhat7/yum/cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.1.0/redhat6/yum/</code> | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.1.0/redhat6/yum/cloudera-manager.repo</code> |
| SLES 12 | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.1.0/sles12/yum/</code> | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.1.0/sles12/yum/cloudera-manager.repo</code> |
| Ubuntu Xenial (16.04) | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.1.0/ubuntu1604/apt/</code> | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.1.0/ubuntu1604/apt/cloudera-manager.list</code> |

Cloudera Manager 6.0.1

Release Date: October 2018

Documentation:

- [Cloudera Manager 6.0.1 Release Notes](#) on page 351
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)

Table 29: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|--|---|
| RHEL 7 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.0.1/redhat7/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.0.1/redhat7/yum/ cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.0.1/redhat6/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.0.1/redhat6/yum/ cloudera-manager.repo</code> |
| SLES 12 | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.0.1/sles12/yum/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.0.1/sles12/yum/ cloudera-manager.repo</code> |
| Ubuntu Xenial (16.04) | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.0.1/ubuntu1604/ apt/</code> | <code>https:// <username>:password@archive.cloudera.com/ p/cm6/6.0.1/ubuntu1604/ apt/cloudera-manager.list</code> |

Cloudera Manager 6.0.0

Release Date: July 2018**Documentation:**

- [Cloudera Manager 6.0.0 Release Notes](#) on page 355
- [Cloudera Installation Guide](#)
- [Cloudera Enterprise Upgrade Guide](#)

Table 30: Repositories

| Type | Location (baseurl) | Repo File |
|-----------------------|---|--|
| RHEL 7 Compatible | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.0.0/redhat7/yum/</code> | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.0.0/redhat7/yum/cloudera-manager.repo</code> |
| RHEL6 Compatible | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.0.0/redhat6/yum/</code> | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.0.0/redhat6/yum/cloudera-manager.repo</code> |
| SLES 12 | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.0.0/sles12/yum/</code> | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.0.0/sles12/yum/cloudera-manager.repo</code> |
| Ubuntu Xenial (16.04) | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.0.0/ubuntu1604/apt/</code> | <code>https://<username>:<password>@archive.cloudera.com/p/cm6/6.0.0/ubuntu1604/apt/cloudera-manager.list</code> |

CDH 6 Version, Packaging, and Download Information

For installation instructions for CDH, see [Cloudera Installation](#).

CDH is available in the following releases:

- CDH 6 is based on Apache Hadoop 3. For more information, see [CDH 6 Packaging Information](#) on page 70.
- CDH 5 is based on Apache Hadoop 2.3.0 or later. For information on the exact Apache Hadoop version included in each CDH 5 version, see [CDH 5 Packaging and Tarball Information](#).

CDH 6 Download Information



Important: As of February 1, 2021, all downloads of CDH and Cloudera Manager require a username and password and use a modified URL. You must use the modified URL, including the username and password when downloading the repository contents described below. You may need to upgrade Cloudera Manager to a newer version that uses the modified URLs.

This can affect new installations, upgrades, adding new hosts to a cluster, adding a cluster and adding new services to a cluster.

For more information, see [Updating an existing CDH/Cloudera Manager deployment to access downloads with authentication](#) on page 284.

These topics describe download information for CDH 6.

Authentication to the Cloudera Archive

As of February 1, 2021, access to CDH binaries for production purposes requires authentication. To access the binaries at the locations below, you must first have an active subscription agreement and obtain a license key file along with the required authentication credentials (username and password).

The license key file and authentication credentials are provided in an email sent to customer accounts from Cloudera when a new license is issued. If you have an existing license with a Cloudera Enterprise entitlement, you might not have received an email. In this instance you can identify the authentication credentials from the license key file. If you do not have access to the license key, contact your account representative to receive a copy.

To identify your authentication credentials using your license key file, complete the following steps:

- From cloudera.com, log into the cloudera.com account associated with the Cloudera Enterprise license and subscription agreement.
- On the [Cloudera CDH Download](#) page, select the version that you want to install and click **Get It Now!**
- Scroll down to the Credentials Generator at the bottom of the page.
- In the Generate Credentials text box, copy and paste the text of the “PGP Signed Message” within your license key file and click **Get Credentials**. The credentials generator returns your username and password.



Note: Take note of the authentication credentials. You might need them during installation to complete tasks such as configuring a remote or local package repository.

When you obtain your authentication credentials, use them to form the URLs below, where you can access the Cloudera CDH repository in the Cloudera Archive.

CDH 6.3.x Download Information



Important: As of February 1, 2021, all downloads of CDH and Cloudera Manager require a username and password and use a modified URL. You must use the modified URL, including the username and password when downloading the repository contents described below. You may need to upgrade Cloudera Manager to a newer version that uses the modified URLs.

This can affect new installations, upgrades, adding new hosts to a cluster, adding a cluster and adding new services to a cluster.

For more information, see [Updating an existing CDH/Cloudera Manager deployment to access downloads with authentication](#) on page 284.

The section describes download information for CDH 6.3.x. For a different release, see [CDH 6 Download Information](#) on page 62

CDH 6.3.4

Release Date: October 30, 2020

| Repository Type | Location (baseurl) |
|-----------------------|--|
| Parcels | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.4/parcels/</code> |
| RHEL 7 Compatible | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.4/redhat7/yum/</code> |
| RHEL 6 Compatible | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.4/redhat6/yum/</code> |
| SLES 12 | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.4/sles12/yum/</code> |
| Ubuntu Bionic (18.04) | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.4/ubuntu1804/apt/</code> |
| Ubuntu Xenial (16.04) | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.4/ubuntu1604/apt/</code> |



Note: If you use a licensed, entitled version of Cloudera Manager 6.3.4 to install CDH 6.3.4 packages or parcels, you do not need to include a username/password or the "@" symbol in the repository URL during installation. Cloudera Manager will authenticate to the Cloudera archive using the information in your license key file.

If you are using any version of Cloudera Manager **older than** 6.3.4 to install CDH 6.3.4 packages or parcels, you must include the username/password and "@" in the repository URL during installation or when you configure a CDH 6.3.4 parcel repository.

CDH 6.3.3

Release Date: February 3, 2020

| Repository Type | Location (baseurl) |
|-----------------------|--|
| Parcels | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.3/parcels/</code> |
| RHEL 7 Compatible | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.3/redhat7/yum/</code> |
| RHEL 6 Compatible | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.3/redhat6/yum/</code> |
| SLES 12 | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.3/sles12/yum/</code> |
| Ubuntu Bionic (18.04) | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.3/ubuntu1804/apt/</code> |
| Ubuntu Xenial (16.04) | <code>https:// <username>:<password>@archive.cloudera.com/ p/cdh6/6.3.3/ubuntu1604/apt/</code> |



Note: If you use a licensed, entitled version of Cloudera Manager 6.3.3 to install CDH 6.3.3 packages or parcels, you do not need to include a username/password or the "@" symbol in the repository URL during installation. Cloudera Manager will authenticate to the Cloudera archive using the information in your license key file.

If you are using any version of Cloudera Manager **older than** 6.3.3 to install CDH 6.3.3 packages or parcels, you must include the username/password and "@" in the repository URL during installation or when you configure a CDH 6.3.3 parcel repository.

CDH 6.3.2

Original Release Date: November 12, 2019

CDH 6.3.2 was replaced with the 6.3.2-patch4071 hotfix release in February 2021.

| Repository Type | Location (baseurl) |
|-----------------------|--|
| Parcels | <code>https:// <username>:<password>@archive.cloudera.com/ cdh6/6.3.2-patch4071/parcels/</code> |
| RHEL 7 Compatible | <code>https:// <username>:<password>@archive.cloudera.com/ cdh6/6.3.2-patch4071/redhat7/yum/</code> |
| RHEL 6 Compatible | <code>https:// <username>:<password>@archive.cloudera.com/ cdh6/6.3.2-patch4071/redhat6/yum/</code> |
| SLES 12 | <code>https:// <username>:<password>@archive.cloudera.com/ cdh6/6.3.2-patch4071/sles12/yum/</code> |
| Ubuntu Bionic (18.04) | <code>https:// <username>:<password>@archive.cloudera.com/ cdh6/6.3.2-patch4071/ubuntu1804/apt/</code> |
| Ubuntu Xenial (16.04) | <code>https:// <username>:<password>@archive.cloudera.com/ cdh6/6.3.2-patch4071/ubuntu1604/apt/</code> |

CDH 6.3.1

Release Date: October 11, 2019



Important: CDH 6.3.0 and 6.3.1 release repositories were removed from Cloudera Archive on January 1, 2020. Upgrade to CDH 6.3.2 containing only this fix, or to any later CDH version.

CDH 6.3.0

Release Date: July 31, 2019



Important: CDH 6.3.0 and 6.3.1 release repositories were removed from Cloudera Archive on January 1, 2020. Upgrade to CDH 6.3.2 containing only this fix, or to any later CDH version.

CDH 6.2.x Download Information



Important: As of February 1, 2021, all downloads of CDH and Cloudera Manager require a username and password and use a modified URL. You must use the modified URL, including the username and password when downloading the repository contents described below. You may need to upgrade Cloudera Manager to a newer version that uses the modified URLs.

This can affect new installations, upgrades, adding new hosts to a cluster, adding a cluster and adding new services to a cluster.

For more information, see [Updating an existing CDH/Cloudera Manager deployment to access downloads with authentication](#) on page 284.

The section describes download information for CDH 6.3.x. For a different release, see [CDH 6 Download Information](#) on page 62

CDH 6.2.1

Original Release Date: September 18, 2019

CDH 6.2.1 was replaced with the 6.2.1-patch4069 hotfix release in February 2021.

| Repository Type | Location (baseurl) |
|-----------------------|---|
| Parcels | https://archive.cloudera.com/cdh6/6.2.1-patch4069/parcels/ |
| RHEL 7 Compatible | https://archive.cloudera.com/cdh6/6.2.1-patch4069/redhat7/yum/ |
| RHEL 6 Compatible | https://archive.cloudera.com/cdh6/6.2.1-patch4069/redhat6/yum/ |
| SLES 12 | https://archive.cloudera.com/cdh6/6.2.1-patch4069/sles12/yum/ |
| Ubuntu Bionic (18.04) | https://archive.cloudera.com/cdh6/6.2.1-patch4069/ubuntu1804/apt/ |
| Ubuntu Xenial (16.04) | https://archive.cloudera.com/cdh6/6.2.1-patch4069/ubuntu1604/apt/ |

CDH 6.2.0

Release Date: March 28, 2019

| Repository Type | Location (baseurl) |
|-----------------------|--|
| Parcels | <code>https://archive.cloudera.com/cdh6/6.2.0/parcels/</code> |
| RHEL 7 Compatible | <code>https://archive.cloudera.com/cdh6/6.2.0/redhat7/yum/</code> |
| RHEL 6 Compatible | <code>https://archive.cloudera.com/cdh6/6.2.0/redhat6/yum/</code> |
| SLES 12 | <code>https://archive.cloudera.com/cdh6/6.2.0/sles12/yum/</code> |
| Ubuntu Bionic (18.04) | <code>https://archive.cloudera.com/cdh6/6.2.0/ubuntu1804/apt/</code> |
| Ubuntu Xenial (16.04) | <code>https://archive.cloudera.com/cdh6/6.2.0/ubuntu1604/apt/</code> |

CDH 6.1.x Download Information



Important: As of February 1, 2021, all downloads of CDH and Cloudera Manager require a username and password and use a modified URL. You must use the modified URL, including the username and password when downloading the repository contents described below. You may need to upgrade Cloudera Manager to a newer version that uses the modified URLs.

This can affect new installations, upgrades, adding new hosts to a cluster, adding a cluster and adding new services to a cluster.

For more information, see [Updating an existing CDH/Cloudera Manager deployment to access downloads with authentication](#) on page 284.

The section describes download information for CDH 6.3.x. For a different release, see [CDH 6 Download Information](#) on page 62

CDH 6.1.1

Release Date: February 20, 2019

| Repository Type | Location (baseurl) |
|-----------------------|--|
| Parcels | <code>https://archive.cloudera.com/cdh6/6.1.1/parcels/</code> |
| RHEL 7 Compatible | <code>https://archive.cloudera.com/cdh6/6.1.1/redhat7/yum/</code> |
| RHEL 6 Compatible | <code>https://archive.cloudera.com/cdh6/6.1.1/redhat6/yum/</code> |
| SLES 12 | <code>https://archive.cloudera.com/cdh6/6.1.1/sles12/yum/</code> |
| Ubuntu Xenial (16.04) | <code>https://archive.cloudera.com/cdh6/6.1.1/ubuntu1604/apt/</code> |

CDH 6.1.0

Release Date: December 18, 2018

| Repository Type | Location (baseurl) |
|-----------------------|--|
| Parcels | <code>https://archive.cloudera.com/cdh6/6.1.0/parcels/</code> |
| RHEL 7 Compatible | <code>https://archive.cloudera.com/cdh6/6.1.0/redhat7/yum/</code> |
| RHEL 6 Compatible | <code>https://archive.cloudera.com/cdh6/6.1.0/redhat6/yum/</code> |
| SLES 12 | <code>https://archive.cloudera.com/cdh6/6.1.0/sles12/yum/</code> |
| Ubuntu Xenial (16.04) | <code>https://archive.cloudera.com/cdh6/6.1.0/ubuntu1604/apt/</code> |

CDH 6.0.x Download Information



Important: As of February 1, 2021, all downloads of CDH and Cloudera Manager require a username and password and use a modified URL. You must use the modified URL, including the username and password when downloading the repository contents described below. You may need to upgrade Cloudera Manager to a newer version that uses the modified URLs.

This can affect new installations, upgrades, adding new hosts to a cluster, adding a cluster and adding new services to a cluster.

For more information, see [Updating an existing CDH/Cloudera Manager deployment to access downloads with authentication](#) on page 284.

The section describes download information for CDH 6.0.x. For a different release, see [CDH 6 Download Information](#) on page 62

CDH 6.0.1

Release Date: October 11, 2018

| Repository Type | Location (baseurl) |
|-----------------------|---|
| Parcels | https://archive.cloudera.com/cdh6/6.0.1/parcels/ |
| RHEL 7 Compatible | https://archive.cloudera.com/cdh6/6.0.1/redhat7/yum/ |
| RHEL 6 Compatible | https://archive.cloudera.com/cdh6/6.0.1/redhat6/yum/ |
| SLES 12 | https://archive.cloudera.com/cdh6/6.0.1/sles12/yum/ |
| Ubuntu Xenial (16.04) | https://archive.cloudera.com/cdh6/6.0.1/ubuntu1604/apt/ |

CDH 6.0.0

Release Date: August 30, 2018

| Repository Type | Location (baseurl) |
|-----------------------|---|
| Parcels | https://archive.cloudera.com/cdh6/6.0.0/parcels/ |
| RHEL 7 Compatible | https://archive.cloudera.com/cdh6/6.0.0/redhat7/yum/ |
| RHEL 6 Compatible | https://archive.cloudera.com/cdh6/6.0.0/redhat6/yum/ |
| SLES 12 | https://archive.cloudera.com/cdh6/6.0.0/sles12/yum/ |
| Ubuntu Xenial (16.04) | https://archive.cloudera.com/cdh6/6.0.0/ubuntu1604/apt/ |

CDH 6 Packaging Information

Each CDH release series is made up of a collection of CDH project packages that are known to work together. The package version numbers of the CDH projects in each CDH release are listed in the following table.

 **Important:** To see the details of all the changes and bug-fixes for a given component in a given release, make sure you read the Changes information as well as the Release Notes, following the links in the tables below.

Component Versions

For a complete list of the individual component versions, see the `manifest.json` file in the parcel directory for your chosen release. The component version numbers are the same in parcels as the package distributions for each release.

1. Go to <https://archive.cloudera.com/cdh6/>.
2. Click through to the `parcels` directory for your release (for example, `https://archive.cloudera.com/cdh6/6.3.4/parcels/`).
3. Open the `manifest.json` file.

For each component, the `pkg_version` is a concatenation of `<component_base_version>+<cdh_version>+0` where:

- `<component-base_version>` is the base version of the open source component included in the CDH package.
- `<cdh_version>` is the version of the CDH package.

For example, in <https://archive.cloudera.com/cdh6/6.0.0/parcels/>, this entry for Hadoop shows that the upstream version is 3.0.0, the CDH version is 6.0.0.

```
{
  "name": "hadoop",
  "pkg_release": "1.cdh6.0.0.p.284270",
  "pkg_version": "3.0.0+cdh6.0.0+",
  "version": "3.0.0-cdh6.0.0-SNAPSHOT"
},
```

Build and Release Numbering

If you are installing CDH 6 with a package manager, you will also see build and release information as part of the file name. The build and package release fields follow the patch level: for example, `hbase-2.0.0+cdh6.0.0+0-1.cdh6.0.0.p.284270.e17.x86_64.rpm`. The suffix `-1.cdh6.0.0.p.284270.e17.x86_64` represents:

- the base of the release field (1)
- the CDH release (`cdh6.0.0`)
- a legacy patch identifier (`p`)
- a unique CDH build number (284270)
- the distribution (`e17` = RHEL 7 compatible, `e16` = RHEL 6 compatible). SLES 12 packages omit this.
- the processor architecture (`x86_64`, `noarch`, `i386`, `amd_64`). `noarch` means that the packages are not architecture-specific.

External Documentation



Note: This page contains references to CDH 5 components or features that have been removed from CDH 6. These references are only applicable if you are managing a CDH 5 cluster with Cloudera Manager 6. For more information, see [Deprecated Items](#) on page 1459.

Cloudera provides documentation for CDH as a whole, whether your CDH cluster is managed by Cloudera Manager or not. In addition, you may find it useful to refer to documentation for the individual components included in CDH. Where possible, these links point to the main documentation for a project, in the Cloudera release archive. This ensures that you are looking at the correct documentation for the version of a project included in CDH. Otherwise, the links may point to the project's main site.

- [Apache Avro](#)
- [Apache Crunch](#)
- [Apache Flume](#)
- [Apache Hadoop](#)
- [Apache HBase](#)
- [Apache Hive](#)
- [Hue](#)
- [Kite](#)
- [Apache Oozie](#)
- [Apache Parquet](#)

- [Apache Pig](#)
- [Apache Sentry](#)
- [Apache Solr](#)
- [Apache Spark](#)
- [Apache Sqoop](#)
- [Apache ZooKeeper](#)

CDH 6.3.x Packaging

The package version numbers of the projects comprising each CDH 6.3.x release are listed in the following tables. For the same type of information for other CDH releases, see [CDH 6 Packaging Information](#) on page 70. To view the overall release notes for CDH 6, see [CDH 6 Release Notes](#) on page 367.

 **Important:** To see the details of all the changes and bug-fixes for a given component in a given release, make sure you read the Changes information as well as the Release Notes, following the links in the tables below.

CDH 6.3.4 Packaging

| Component | Component Version |
|------------------|-------------------|
| Apache Avro | 1.8.2 |
| Apache Flume | 1.9.0 |
| Apache Hadoop | 3.0.0 |
| Apache HBase | 2.1.4 |
| HBase Indexer | 1.5 |
| Apache Hive | 2.1.1 |
| Hue | 4.4.0 |
| Apache Impala | 3.2.0 |
| Apache Kafka | 2.2.1 |
| Kite SDK | 1.0.0 |
| Apache Kudu | 1.10.0 |
| Apache Solr | 7.4.0 |
| Apache Oozie | 5.1.0 |
| Apache Parquet | 1.9.0 |
| Parquet-format | 2.4.0 |
| Apache Pig | 0.17.0 |
| Apache Sentry | 2.1.0 |
| Apache Spark | 2.4.0 |
| Apache Sqoop | 1.4.7 |
| Apache ZooKeeper | 3.4.5 |

CDH 6.3.3 Packaging

| Component | Component Version |
|-------------|-------------------|
| Apache Avro | 1.8.2 |

| Component | Component Version |
|------------------|-------------------|
| Apache Flume | 1.9.0 |
| Apache Hadoop | 3.0.0 |
| Apache HBase | 2.1.4 |
| HBase Indexer | 1.5 |
| Apache Hive | 2.1.1 |
| Hue | 4.4.0 |
| Apache Impala | 3.2.0 |
| Apache Kafka | 2.2.1 |
| Kite SDK | 1.0.0 |
| Apache Kudu | 1.10.0 |
| Apache Solr | 7.4.0 |
| Apache Oozie | 5.1.0 |
| Apache Parquet | 1.9.0 |
| Parquet-format | 2.4.0 |
| Apache Pig | 0.17.0 |
| Apache Sentry | 2.1.0 |
| Apache Spark | 2.4.0 |
| Apache Sqoop | 1.4.7 |
| Apache ZooKeeper | 3.4.5 |



Note: Starting with 6.3.3, CDH repositories require authentication with valid credentials to access the changes information.

CDH 6.3.2 Packaging

| Component | Component Version | Changes Information |
|---------------|-------------------|-------------------------|
| Apache Avro | 1.8.2 | Changes |
| Apache Flume | 1.9.0 | Changes |
| Apache Hadoop | 3.0.0 | Changes |
| Apache HBase | 2.1.4 | Changes |
| HBase Indexer | 1.5 | Changes |
| Apache Hive | 2.1.1 | Changes |
| Hue | 4.3.0 | Changes |
| Apache Impala | 3.2.0 | Changes |
| Apache Kafka | 2.2.1 | Changes |
| Kite SDK | 1.0.0 | Changes |
| Apache Kudu | 1.10.0 | Changes |

| Component | Component Version | Changes Information |
|------------------|-------------------|-------------------------|
| Apache Solr | 7.4.0 | Changes |
| Apache Oozie | 5.1.0 | Changes |
| Apache Parquet | 1.9.0 | Changes |
| Parquet-format | 2.4.0 | Changes |
| Apache Pig | 0.17.0 | Changes |
| Apache Sentry | 2.1.0 | Changes |
| Apache Spark | 2.4.0 | Changes |
| Apache Sqoop | 1.4.7 | Changes |
| Apache ZooKeeper | 3.4.5 | Changes |

CDH 6.3.1 Packaging

| Component | Component Version | Changes Information |
|------------------|-------------------|-------------------------|
| Apache Avro | 1.8.2 | Changes |
| Apache Flume | 1.9.0 | Changes |
| Apache Hadoop | 3.0.0 | Changes |
| Apache HBase | 2.1.4 | Changes |
| HBase Indexer | 1.5 | Changes |
| Apache Hive | 2.1.1 | Changes |
| Hue | 4.3.0 | Changes |
| Apache Impala | 3.2.0 | Changes |
| Apache Kafka | 2.2.1 | Changes |
| Kite SDK | 1.0.0 | Changes |
| Apache Kudu | 1.10.0 | Changes |
| Apache Solr | 7.4.0 | Changes |
| Apache Oozie | 5.1.0 | Changes |
| Apache Parquet | 1.9.0 | Changes |
| Parquet-format | 2.4.0 | Changes |
| Apache Pig | 0.17.0 | Changes |
| Apache Sentry | 2.1.0 | Changes |
| Apache Spark | 2.4.0 | Changes |
| Apache Sqoop | 1.4.7 | Changes |
| Apache ZooKeeper | 3.4.5 | Changes |

CDH 6.3.0 Packaging

| Component | Component Version | Changes Information |
|-------------|-------------------|-------------------------|
| Apache Avro | 1.8.2 | Changes |

| Component | Component Version | Changes Information |
|------------------|-------------------|-------------------------|
| Apache Flume | 1.9.0 | Changes |
| Apache Hadoop | 3.0.0 | Changes |
| Apache HBase | 2.1.4 | Changes |
| HBase Indexer | 1.5 | Changes |
| Apache Hive | 2.1.1 | Changes |
| Hue | 4.3.0 | Changes |
| Apache Impala | 3.2.0 | Changes |
| Apache Kafka | 2.2.1 | Changes |
| Kite SDK | 1.0.0 | |
| Apache Kudu | 1.10.0 | Changes |
| Apache Solr | 7.4.0 | Changes |
| Apache Oozie | 5.1.0 | Changes |
| Apache Parquet | 1.9.0 | Changes |
| Parquet-format | 2.4.0 | Changes |
| Apache Pig | 0.17.0 | Changes |
| Apache Sentry | 2.1.0 | Changes |
| Apache Spark | 2.4.0 | Changes |
| Apache Sqoop | 1.4.7 | Changes |
| Apache ZooKeeper | 3.4.5 | Changes |

CDH 6.2.x Packaging

The package version numbers of the projects comprising each CDH 6.2.x release are listed in the following tables. For the same type of information for other CDH releases, see [CDH 6 Packaging Information](#) on page 70. To view the overall release notes for CDH 6, see [CDH 6 Release Notes](#) on page 367.



Important: To see the details of all the changes and bug-fixes for a given component in a given release, make sure you read the Changes information as well as the Release Notes, following the links in the tables below.

CDH 6.2.1 Packaging

| Component | Component Version | Changes Information |
|---------------|-------------------|-------------------------|
| Apache Avro | 1.8.2 | Changes |
| Apache Flume | 1.9.0 | Changes |
| Apache Hadoop | 3.0.0 | Changes |
| Apache HBase | 2.1.2 | Changes |
| HBase Indexer | 1.5 | Changes |
| Apache Hive | 2.1.1 | Changes |
| Hue | 4.3.0 | Changes |

| Component | Component Version | Changes Information |
|------------------|-------------------|-------------------------|
| Apache Impala | 3.2.0 | Changes |
| Apache Kafka | 2.1.0 | Changes |
| Kite SDK | 1.0.0 | Changes |
| Apache Kudu | 1.9.0 | Changes |
| Apache Solr | 7.4.0 | Changes |
| Apache Oozie | 5.1.0 | Changes |
| Apache Parquet | 1.9.0 | Changes |
| Parquet-format | 2.3.1 | Changes |
| Apache Pig | 0.17.0 | Changes |
| Apache Sentry | 2.1.0 | Changes |
| Apache Spark | 2.4.0 | Changes |
| Apache Sqoop | 1.4.7 | Changes |
| Apache ZooKeeper | 3.4.5 | Changes |

CDH 6.2.0 Packaging

| Component | Component Version | Changes Information |
|------------------|-------------------|-------------------------|
| Apache Avro | 1.8.2 | Changes |
| Apache Flume | 1.9.0 | Changes |
| Apache Hadoop | 3.0.0 | Changes |
| Apache HBase | 2.1.2 | Changes |
| HBase Indexer | 1.5 | Changes |
| Apache Hive | 2.1.1 | Changes |
| Hue | 4.3.0 | Changes |
| Apache Impala | 3.2.0 | Changes |
| Apache Kafka | 2.1.0 | Changes |
| Kite SDK | 1.0.0 | |
| Apache Kudu | 1.9.0 | Changes |
| Apache Solr | 7.4.0 | Changes |
| Apache Oozie | 5.1.0 | Changes |
| Apache Parquet | 1.9.0 | Changes |
| Parquet-format | 2.3.1 | Changes |
| Apache Pig | 0.17.0 | Changes |
| Apache Sentry | 2.1.0 | Changes |
| Apache Spark | 2.4.0 | Changes |
| Apache Sqoop | 1.4.7 | Changes |
| Apache ZooKeeper | 3.4.5 | Changes |

CDH 6.1.x Packaging

The package version numbers of the projects comprising each CDH 6.1.x release are listed in the following tables. For the same type of information for other CDH releases, see [CDH 6 Packaging Information](#) on page 70. To view the overall release notes for CDH 6, see [CDH 6 Release Notes](#) on page 367.



Important: To see the details of all the changes and bug-fixes for a given component in a given release, make sure you read the Changes information as well as the Release Notes, following the links in the tables below.

CDH 6.1.1 Packaging

| Component | Component Version | Changes Information |
|------------------|-------------------|-------------------------|
| Apache Avro | 1.8.2 | Changes |
| Apache Flume | 1.8.0 | Changes |
| Apache Hadoop | 3.0.0 | Changes |
| Apache HBase | 2.1.1 | Changes |
| HBase Indexer | 1.5 | Changes |
| Apache Hive | 2.1.1 | Changes |
| Hue | 4.3.0 | Changes |
| Apache Impala | 3.1.0 | Changes |
| Apache Kafka | 2.0 | Changes |
| Kite SDK | 1.0.0 | |
| Apache Kudu | 1.8.0 | Changes |
| Apache Solr | 7.4 | Changes |
| Apache Oozie | 5.0.0 | Changes |
| Apache Parquet | 1.9.0 | Changes |
| Parquet-format | 2.3.1 | Changes |
| Apache Pig | 0.17.0 | Changes |
| Apache Sentry | 2.1.0 | Changes |
| Apache Spark | 2.4 | Changes |
| Apache Sqoop | 1.4.7 | Changes |
| Apache ZooKeeper | 3.4.5 | Changes |

CDH 6.1.0 Packaging

| Component | Component Version | Changes Information |
|---------------|-------------------|-------------------------|
| Apache Avro | 1.8.2 | Changes |
| Apache Flume | 1.8.0 | Changes |
| Apache Hadoop | 3.0.0 | Changes |
| Apache HBase | 2.1.1 | Changes |
| HBase Indexer | 1.5 | Changes |
| Apache Hive | 2.1.1 | Changes |

| Component | Component Version | Changes Information |
|------------------|-------------------|-------------------------|
| Hue | 4.3.0 | Changes |
| Apache Impala | 3.1.0 | Changes |
| Apache Kafka | 2.0 | Changes |
| Kite SDK | 1.0.0 | |
| Apache Kudu | 1.8.0 | Changes |
| Apache Solr | 7.4 | Changes |
| Apache Oozie | 5.0.0 | Changes |
| Apache Parquet | 1.9.0 | Changes |
| Parquet-format | 2.3.1 | Changes |
| Apache Pig | 0.17.0 | Changes |
| Apache Sentry | 2.1.0 | Changes |
| Apache Spark | 2.4 | Changes |
| Apache Sqoop | 1.4.7 | Changes |
| Apache ZooKeeper | 3.4.5 | Changes |

CDH 6.0.x Packaging

The package version numbers of the projects comprising each CDH 6.0.x release are listed in the following tables. For the same type of information for other CDH releases, see [CDH 6 Packaging Information](#) on page 70. To view the overall release notes for CDH 6, see [CDH 6 Release Notes](#) on page 367.



Important: To see the details of all the changes and bug-fixes for a given component in a given release, make sure you read the Changes information as well as the Release Notes, following the links in the tables below.

CDH 6.0.1 Packaging

| Component | Component Version | Changes Information |
|---------------|-------------------|-------------------------|
| Apache Avro | 1.8.2 | Changes |
| Apache Flume | 1.8.0 | Changes |
| Apache Hadoop | 3.0.0 | Changes |
| Apache HBase | 2.0.2 | Changes |
| HBase Indexer | 1.5 | Changes |
| Apache Hive | 2.1.1 | Changes |
| Hue | 4.2.0 | Changes |
| Apache Impala | 3.0.0 | Changes |
| Apache Kafka | 1.0.1 | Changes |
| Kite SDK | 1.0.0 | |
| Apache Kudu | 1.6.0 | Changes |
| Apache Solr | 7.0.0 | Changes |

| Component | Component Version | Changes Information |
|------------------|-------------------|-------------------------|
| Apache Oozie | 5.0.0 | Changes |
| Apache Parquet | 1.9.0 | Changes |
| Parquet-format | 2.3.1 | Changes |
| Apache Pig | 0.17.0 | Changes |
| Apache Sentry | 2.0.0 | Changes |
| Apache Spark | 2.2.0 | Changes |
| Apache Sqoop | 1.4.7 | Changes |
| Apache ZooKeeper | 3.4.5 | Changes |

CDH 6.0.0 Packaging

| Component | Component Version | Changes Information |
|------------------|-------------------|-------------------------|
| Apache Avro | 1.8.2 | Changes |
| Apache Flume | 1.8.0 | Changes |
| Apache Hadoop | 3.0.0 | Changes |
| Apache HBase | 2.0.0 | Changes |
| HBase Indexer | 1.5 | Changes |
| Apache Hive | 2.1.1 | Changes |
| Hue | 4.2.0 | Changes |
| Apache Impala | 3.0.0 | Changes |
| Apache Kafka | 1.0.1 | Changes |
| Kite SDK | 1.0.0 | |
| Apache Kudu | 1.6.0 | Changes |
| Apache Solr | 7.0.0 | Changes |
| Apache Oozie | 5.0.0 | Changes |
| Apache Parquet | 1.9.0 | Changes |
| Parquet-format | 2.3.1 | Changes |
| Apache Pig | 0.17.0 | Changes |
| Apache Sentry | 2.0.0 | Changes |
| Apache Spark | 2.2.0 | Changes |
| Apache Sqoop | 1.4.7 | Changes |
| Apache ZooKeeper | 3.4.5 | Changes |

Using the CDH 6 Maven Repository

If you want to build applications or tools for use with CDH 6 components and you are using Maven or Ivy for dependency management, you can pull the CDH 6 artifacts from the Cloudera Maven repository. The repository is available at <https://repository.cloudera.com/artifactory/cloudera-repos/>.



Important: When you build an application JAR, *do not* include CDH JARs, because they are already provided. If you do, upgrading CDH can break your application. To avoid this situation, set the Maven dependency `scope` to `provided`. If you have already built applications which include the CDH JARs, update the dependency to set `scope` to `provided` and recompile.

The following is a sample POM (`pom.xml`) file:

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/maven-v4_0_0.xsd">
  <repositories>
    <repository>
      <id>cloudera</id>
      <url>https://repository.cloudera.com/artifactory/cloudera-repos/</url>
    </repository>
  </repositories>
</project>
```

Maven Artifacts for CDH 6.3.x Releases

CDH 6.3.4

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|---------------|-------------------|-------------------------|-----------------|
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.3.4 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.3.4 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.3.4 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.3.4 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.3.4 |
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.3.4 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.3.4 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.3.4 |
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.3.4 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.3.4 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.3.4 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.3.4 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.3.4 |

| Project | groupId | artifactId | version |
|------------------|------------------------------------|--------------------------------|-----------------|
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.3.4 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.3.4 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.3.4 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.3.4 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.3.4 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.3.4 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.3.4 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.3.4 |
| Apache Flume 1.x | org.apache.flume | flume-ng-auth | 1.9.0-cdh6.3.4 |
| | org.apache.flume | flume-ng-configuration | 1.9.0-cdh6.3.4 |
| | org.apache.flume | flume-ng-core | 1.9.0-cdh6.3.4 |
| | org.apache.flume | flume-ng-embedded-agent | 1.9.0-cdh6.3.4 |
| | org.apache.flume | flume-ng-node | 1.9.0-cdh6.3.4 |
| | org.apache.flume | flume-ng-sdk | 1.9.0-cdh6.3.4 |
| | org.apache.flume | flume-ng-tests | 1.9.0-cdh6.3.4 |
| | org.apache.flume | flume-tools | 1.9.0-cdh6.3.4 |
| | org.apache.flume.flume-ng-channels | flume-file-channel | 1.9.0-cdh6.3.4 |
| | org.apache.flume.flume-ng-channels | flume-jdbc-channel | 1.9.0-cdh6.3.4 |
| | org.apache.flume.flume-ng-channels | flume-kafka-channel | 1.9.0-cdh6.3.4 |
| | org.apache.flume.flume-ng-channels | flume-spillable-memory-channel | 1.9.0-cdh6.3.4 |

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| | org.apache. flume. flume-ng-clients | flume-ng-log4jappender | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-config-filter-api | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-environment-variable-config-filter | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-external-process-config-filter | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-hadoop-credential-store-config-filter | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sources | flume-avro-source | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sources | flume-thrift-source | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sinks | flume-dataset-sink | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sinks | flume-hdfs-sink | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.9.0-cdh6.3.4 |

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| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sources | flume-kafka-source | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sources | flume-scribe-source | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sources | flume-taildir-source | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-ng-sources | flume-twitter-source | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-shared | flume-shared-kafka | 1.9.0-cdh6.3.4 |
| | org.apache. flume. flume-shared | flume-shared-kafka-test | 1.9.0-cdh6.3.4 |
| GCS Connector | com.google. cloud. bigdataoss | gcs-connector | hadoop3-1.9. 10-cdh6.3.4 |
| | com.google. cloud. bigdataoss | gcsio | 1.9.10-cdh6.3. 4 |
| | com.google. cloud. bigdataoss | util | 1.9.10-cdh6.3. 4 |
| | com.google. cloud. bigdataoss | util-hadoop | hadoop3-1.9. 10-cdh6.3.4 |
| Apache Hadoop | org.apache. hadoop | hadoop-aliyun | 3.0.0-cdh6.3.4 |
| | org.apache. hadoop | hadoop-annotations | 3.0.0-cdh6.3.4 |
| | org.apache. hadoop | hadoop-archive-logs | 3.0.0-cdh6.3.4 |
| | org.apache. hadoop | hadoop-archives | 3.0.0-cdh6.3.4 |
| | org.apache. hadoop | hadoop-assemblies | 3.0.0-cdh6.3.4 |
| | org.apache. hadoop | hadoop-auth | 3.0.0-cdh6.3.4 |

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| | org.apache.hadoop | hadoop-aws | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-azure | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-azure-datalake | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-hdfs-httpfs | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.3.4 |

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| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.3.4 |

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| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.3.4 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.3.4 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-checkstyle | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-client | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-client-project | 2.1.0-cdh6.3.4 |

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| | org.apache.hbase | hbase-common | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-endpoint | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-examples | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-external-blockcache | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-hadoop-compat | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-hbtop | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-http | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-it | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-mapreduce | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-metrics | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-metrics-api | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-procedure | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-protocol | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-protocol-shaded | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-replication | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-resource-bundle | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-rest | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-rsgroup | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-server | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-shaded-client | 2.1.0-cdh6.3.4 |

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| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-shaded-client-project | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-shell | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-spark | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-spark-it | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-testing-util | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-thrift | 2.1.0-cdh6.3.4 |
| | org.apache.hbase | hbase-zookeeper | 2.1.0-cdh6.3.4 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.3.4 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.3.4 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.3.4 |

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| | org.apache.hive | hive-cli | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-hpsql | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-kryo-registrator | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.3.4 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.3.4 |

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| | org.apache.hive | hive-testutils | 2.1.1-cdh6.3.4 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.3.4 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.3.4 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.3.4 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.3.4 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.3.4 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.3.4 |
| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.3.4 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.3.4 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.3.4 |
| Apache Kafka | org.apache.kafka | connect-api | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | connect-basic-auth-extension | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | connect-file | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | connect-json | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | connect-runtime | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | connect-transforms | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka-clients | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka-examples | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka-log4j-appender | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka-streams | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka-streams-examples | 2.2.1-cdh6.3.4 |

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| | org.apache.kafka | kafka-streams-scala_2.11 | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka-streams-scala_2.12 | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka-streams-test-utils | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka-tools | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka_2.11 | 2.2.1-cdh6.3.4 |
| | org.apache.kafka | kafka_2.12 | 2.2.1-cdh6.3.4 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.3.4 |

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| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.3.4 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.3.4 |
| Apache Kudu | org.apache.kudu | kudu-backup-tools | 1.10.0-cdh6.3.4 |
| | org.apache.kudu | kudu-backup2_2.11 | 1.10.0-cdh6.3.4 |
| | org.apache.kudu | kudu-client | 1.10.0-cdh6.3.4 |
| | org.apache.kudu | kudu-client-tools | 1.10.0-cdh6.3.4 |
| | org.apache.kudu | kudu-flume-sink | 1.10.0-cdh6.3.4 |
| | org.apache.kudu | kudu-hive | 1.10.0-cdh6.3.4 |
| | org.apache.kudu | kudu-mapreduce | 1.10.0-cdh6.3.4 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.10.0-cdh6.3.4 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.10.0-cdh6.3.4 |
| | org.apache.kudu | kudu-test-utils | 1.10.0-cdh6.3.4 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-core | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-examples | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-fluent-job-api | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-fluent-job-client | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-server | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-sharelib-git | 5.1.0-cdh6.3.4 |

| Project | groupId | artifactId | version |
|-----------------|-----------------------|------------------------------|-----------------|
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-sharelib-hive | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-sharelib-pig | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-sharelib-spark | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.1.0-cdh6.3.4 |
| | org.apache.oozie | oozie-tools | 5.1.0-cdh6.3.4 |
| | org.apache.oozie.test | oozie-mini | 5.1.0-cdh6.3.4 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.3.4 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.3.4 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.3.4 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.3.4 |
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.3.4 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.3.4 |
| Apache Sentry | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.3.4 |
| | org.apache.sentry | sentry-binding-hbase-indexer | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-binding-hive | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-binding-hive-common | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.1.0-cdh6.3.4 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------------|----------------|
| | org.apache.sentry | sentry-binding-hive-follower | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-binding-kafka | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-binding-solr | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-core-common | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-core-model-db | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-core-model-indexer | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-core-model-kafka | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-core-model-solr | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-dist | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-hdfs-common | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-hdfs-dist | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-hdfs-service | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-policy-common | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-policy-engine | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-provider-cache | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-provider-common | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-provider-db | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-provider-file | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-service-api | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-service-client | 2.1.0-cdh6.3.4 |

| Project | groupId | artifactId | version |
|-------------|-------------------|-----------------------------|----------------|
| | org.apache.sentry | sentry-service-providers | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-service-server | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-service-web | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-shaded | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-spi | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-tests-hive | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-tests-kafka | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-tests-solr | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | sentry-tools | 2.1.0-cdh6.3.4 |
| | org.apache.sentry | solr-sentry-handlers | 2.1.0-cdh6.3.4 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-analyzers-icu | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-analyzers-morfologik | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-analyzers-nori | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-analyzers-opennlp | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-analyzers-stempel | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-analyzers-uima | 7.4.0-cdh6.3.4 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------|----------------|
| | org.apache.lucene | lucene-backward-codecs | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-benchmark | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-classification | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-codecs | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-core | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-demo | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-expressions | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-facet | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-grouping | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-highlighter | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-join | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-memory | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-misc | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-queries | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-queryparser | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-replicator | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-sandbox | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-spatial | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-spatial-extras | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-spatial3d | 7.4.0-cdh6.3.4 |
| | org.apache.lucene | lucene-suggest | 7.4.0-cdh6.3.4 |

| Project | groupId | artifactId | version |
|--------------|-------------------|-------------------------------|----------------|
| | org.apache.lucene | lucene-test-framework | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-analysis-extras | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-analytics | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-cell | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-clustering | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-core | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-dataimporthandler | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-jetty-customizations | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-langid | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-ltr | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-prometheus-exporter | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-security-util | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-sentry-audit-logging | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-solrj | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-test-framework | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-uima | 7.4.0-cdh6.3.4 |
| | org.apache.solr | solr-velocity | 7.4.0-cdh6.3.4 |
| Apache Spark | org.apache.spark | spark-avro_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-catalyst_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-core_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-graphx_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-hive_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-kubernetes_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-kvstore_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-launcher_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.4.0-cdh6.3.4 |

| Project | groupId | artifactId | version |
|------------------|----------------------|--|----------------|
| | org.apache.spark | spark-mllib_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-network-common_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-repl_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-sketch_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-sql_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-streaming_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-tags_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-unsafe_2.11 | 2.4.0-cdh6.3.4 |
| | org.apache.spark | spark-yarn_2.11 | 2.4.0-cdh6.3.4 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.3.4 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.3.4 |

CDH 6.3.3

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|---------------|-------------------|-------------------------|-----------------|
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.3.3 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.3.3 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.3.3 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.3.3 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.3.3 |
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.3.3 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.3.3 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.3.3 |
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.3.3 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.3.3 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.3.3 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.3.3 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.3.3 |
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.3.3 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.3.3 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.3.3 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.3.3 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.3.3 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.3.3 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.3.3 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.3.3 |

| Project | groupId | artifactId | version |
|------------------|---|--|----------------|
| Apache Flume 1.x | org.apache.flume | flume-ng-auth | 1.9.0-cdh6.3.3 |
| | org.apache.flume | flume-ng-configuration | 1.9.0-cdh6.3.3 |
| | org.apache.flume | flume-ng-core | 1.9.0-cdh6.3.3 |
| | org.apache.flume | flume-ng-embedded-agent | 1.9.0-cdh6.3.3 |
| | org.apache.flume | flume-ng-node | 1.9.0-cdh6.3.3 |
| | org.apache.flume | flume-ng-sdk | 1.9.0-cdh6.3.3 |
| | org.apache.flume | flume-ng-tests | 1.9.0-cdh6.3.3 |
| | org.apache.flume | flume-tools | 1.9.0-cdh6.3.3 |
| | org.apache.flume. flume-ng-channels | flume-file-channel | 1.9.0-cdh6.3.3 |
| | org.apache.flume. flume-ng-channels | flume-jdbc-channel | 1.9.0-cdh6.3.3 |
| | org.apache.flume. flume-ng-channels | flume-kafka-channel | 1.9.0-cdh6.3.3 |
| | org.apache.flume. flume-ng-channels | flume-spillable-memory-channel | 1.9.0-cdh6.3.3 |
| | org.apache.flume. flume-ng-clients | flume-ng-log4jappender | 1.9.0-cdh6.3.3 |
| | org.apache.flume. flume-ng-configfilters | flume-ng-config-filter-api | 1.9.0-cdh6.3.3 |
| | org.apache.flume. flume-ng-configfilters | flume-ng-environment-variable-config-filter | 1.9.0-cdh6.3.3 |
| | org.apache.flume. flume-ng-configfilters | flume-ng-external-process-config-filter | 1.9.0-cdh6.3.3 |
| | org.apache.flume. flume-ng-configfilters | flume-ng-hadoop-credential-store-config-filter | 1.9.0-cdh6.3.3 |

| Project | groupId | artifactId | version |
|---------|---|------------------------------|----------------|
| | org.apache. flume. flume-ng-sources | flume-avro-source | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sources | flume-thrift-source | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sinks | flume-dataset-sink | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sinks | flume-hdfs-sink | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sources | flume-kafka-source | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sources | flume-scribe-source | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sources | flume-taildir-source | 1.9.0-cdh6.3.3 |
| | org.apache. flume. flume-ng-sources | flume-twitter-source | 1.9.0-cdh6.3.3 |

| Project | groupId | artifactId | version |
|---------------|-------------------------------|---------------------------------|-------------------------|
| | org.apache.flume.flume-shared | flume-shared-kafka | 1.9.0-cdh6.3.3 |
| | org.apache.flume.flume-shared | flume-shared-kafka-test | 1.9.0-cdh6.3.3 |
| GCS Connector | com.google.cloud.bigdataoss | gcs-connector | hadoop3-1.9.10-cdh6.3.3 |
| | com.google.cloud.bigdataoss | gcsio | 1.9.10-cdh6.3.3 |
| | com.google.cloud.bigdataoss | util | 1.9.10-cdh6.3.3 |
| | com.google.cloud.bigdataoss | util-hadoop | hadoop3-1.9.10-cdh6.3.3 |
| Apache Hadoop | org.apache.hadoop | hadoop-aliyun | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-annotations | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-archive-logs | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-archives | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-assemblies | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-auth | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-aws | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-azure | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-azure-datalake | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.3.3 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------------------|----------------|
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-hdfs-httpfs | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.3.3 |

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| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.3.3 |

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| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.3.3 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.3.3 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-checkstyle | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-client | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-client-project | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-common | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-endpoint | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-examples | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-external-blockcache | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-hadoop-compat | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-hbtop | 2.1.0-cdh6.3.3 |

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| | org.apache.hbase | hbase-http | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-it | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-mapreduce | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-metrics | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-metrics-api | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-procedure | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-protocol | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-protocol-shaded | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-replication | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-resource-bundle | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-rest | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-rsgroup | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-server | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-shaded-client | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-shaded-client-project | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-shell | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-spark | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-spark-it | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-testing-util | 2.1.0-cdh6.3.3 |

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| | org.apache.hbase | hbase-thrift | 2.1.0-cdh6.3.3 |
| | org.apache.hbase | hbase-zookeeper | 2.1.0-cdh6.3.3 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.3.3 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.3.3 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-cli | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-hpsql | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.3.3 |

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| | org.apache.hive | hive-kryo-registrator | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.3.3 |
| | org.apache.hive | hive-testutils | 2.1.1-cdh6.3.3 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.3.3 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.3.3 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.3.3 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.3.3 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.3.3 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.3.3 |

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| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.3.3 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.3.3 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.3.3 |
| Apache Kafka | org.apache.kafka | connect-api | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | connect-basic-auth-extension | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | connect-file | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | connect-json | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | connect-runtime | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | connect-transforms | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka-clients | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka-examples | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka-log4j-appender | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka-streams | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka-streams-examples | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka-streams-scala_2.11 | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka-streams-scala_2.12 | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka-streams-test-utils | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka-tools | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka_2.11 | 2.2.1-cdh6.3.3 |
| | org.apache.kafka | kafka_2.12 | 2.2.1-cdh6.3.3 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.3.3 |

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| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.3.3 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.3.3 |
| Apache Kudu | org.apache.kudu | kudu-backup-tools | 1.10.0-cdh6.3.3 |
| | org.apache.kudu | kudu-backup2_2.11 | 1.10.0-cdh6.3.3 |
| | org.apache.kudu | kudu-client | 1.10.0-cdh6.3.3 |
| | org.apache.kudu | kudu-client-tools | 1.10.0-cdh6.3.3 |

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| | org.apache.kudu | kudu-flume-sink | 1.10.0-cdh6.3.3 |
| | org.apache.kudu | kudu-hive | 1.10.0-cdh6.3.3 |
| | org.apache.kudu | kudu-mapreduce | 1.10.0-cdh6.3.3 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.10.0-cdh6.3.3 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.10.0-cdh6.3.3 |
| | org.apache.kudu | kudu-test-utils | 1.10.0-cdh6.3.3 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-core | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-examples | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-fluent-job-api | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-fluent-job-client | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-server | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-sharelib-git | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-sharelib-hive | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-sharelib-pig | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-sharelib-spark | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.1.0-cdh6.3.3 |

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| | org.apache.oozie | oozie-sharelib-streaming | 5.1.0-cdh6.3.3 |
| | org.apache.oozie | oozie-tools | 5.1.0-cdh6.3.3 |
| | org.apache.oozie.test | oozie-mini | 5.1.0-cdh6.3.3 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.3.3 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.3.3 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.3.3 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.3.3 |
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.3.3 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.3.3 |
| Apache Sentry | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.3.3 |
| | org.apache.sentry | sentry-binding-hbase-indexer | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-binding-hive | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-binding-hive-common | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-binding-hive-follower | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-binding-kafka | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-binding-solr | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-core-common | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-core-model-db | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-core-model-indexer | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-core-model-kafka | 2.1.0-cdh6.3.3 |

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| | org.apache.sentry | sentry-core-model-solr | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-dist | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-hdfs-common | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-hdfs-dist | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-hdfs-service | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-policy-common | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-policy-engine | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-provider-cache | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-provider-common | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-provider-db | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-provider-file | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-service-api | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-service-client | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-service-providers | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-service-server | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-service-web | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-shaded | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-spi | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-tests-hive | 2.1.0-cdh6.3.3 |

| Project | groupId | artifactId | version |
|-------------|-------------------|-----------------------------|----------------|
| | org.apache.sentry | sentry-tests-kafka | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-tests-solr | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | sentry-tools | 2.1.0-cdh6.3.3 |
| | org.apache.sentry | solr-sentry-handlers | 2.1.0-cdh6.3.3 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-analyzers-icu | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-analyzers-morfologik | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-analyzers-nori | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-analyzers-openslp | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-analyzers-stempel | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-analyzers-uima | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-backward-codecs | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-benchmark | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-classification | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-codecs | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-core | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-demo | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-expressions | 7.4.0-cdh6.3.3 |

| Project | groupId | artifactId | version |
|---------|-------------------|-------------------------------|----------------|
| | org.apache.lucene | lucene-facet | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-grouping | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-highlighter | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-join | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-memory | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-misc | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-queries | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-queryparser | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-replicator | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-sandbox | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-spatial | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-spatial-extras | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-spatial3d | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-suggest | 7.4.0-cdh6.3.3 |
| | org.apache.lucene | lucene-test-framework | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-analysis-extras | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-analytics | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-cell | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-clustering | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-core | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-dataimporthandler | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-jetty-customizations | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-langid | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-ltr | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-prometheus-exporter | 7.4.0-cdh6.3.3 |

| Project | groupId | artifactId | version |
|--------------|------------------|----------------------------|----------------|
| | org.apache.solr | solr-security-util | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-sentry-audit-logging | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-solrj | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-test-framework | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-uima | 7.4.0-cdh6.3.3 |
| | org.apache.solr | solr-velocity | 7.4.0-cdh6.3.3 |
| Apache Spark | org.apache.spark | spark-avro_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-catalyst_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-core_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-graphx_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-hive_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-kubernetes_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-kvstore_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-launcher_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-mllib_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-network-common_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-repl_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-sketch_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-sql_2.11 | 2.4.0-cdh6.3.3 |

| Project | groupId | artifactId | version |
|------------------|----------------------|--|----------------|
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-streaming_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-tags_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-unsafe_2.11 | 2.4.0-cdh6.3.3 |
| | org.apache.spark | spark-yarn_2.11 | 2.4.0-cdh6.3.3 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.3.3 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.3.3 |

CDH 6.3.2

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|-------------|-----------------|-------------------------|----------------|
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.3.2 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.3.2 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.3.2 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.3.2 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.3.2 |
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.3.2 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.3.2 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.3.2 |

| Project | groupId | artifactId | version |
|------------------|-------------------|-------------------------|-----------------|
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.3.2 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.3.2 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.3.2 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.3.2 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.3.2 |
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.3.2 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.3.2 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.3.2 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.3.2 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.3.2 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.3.2 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.3.2 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.3.2 |
| Apache Flume 1.x | org.apache.flume | flume-ng-auth | 1.9.0-cdh6.3.2 |
| | org.apache.flume | flume-ng-configuration | 1.9.0-cdh6.3.2 |
| | org.apache.flume | flume-ng-core | 1.9.0-cdh6.3.2 |
| | org.apache.flume | flume-ng-embedded-agent | 1.9.0-cdh6.3.2 |
| | org.apache.flume | flume-ng-node | 1.9.0-cdh6.3.2 |
| | org.apache.flume | flume-ng-sdk | 1.9.0-cdh6.3.2 |
| | org.apache.flume | flume-ng-tests | 1.9.0-cdh6.3.2 |
| | org.apache.flume | flume-tools | 1.9.0-cdh6.3.2 |

| Project | groupId | artifactId | version |
|---------|---|--|----------------|
| | org.apache. flume. flume-ng-channels | flume-file-channel | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-channels | flume-jdbc-channel | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-channels | flume-kafka-channel | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-channels | flume-spillable-memory-channel | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-clients | flume-ng-log4jappender | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-config-filter-api | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-environment-variable-config-filter | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-external-process-config-filter | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-hadoop-credential-store-config-filter | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sources | flume-avro-source | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sources | flume-thrift-source | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sinks | flume-dataset-sink | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sinks | flume-hdfs-sink | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.9.0-cdh6.3.2 |

| Project | groupId | artifactId | version |
|---------------|---|------------------------------|-----------------------------|
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sources | flume-kafka-source | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sources | flume-scribe-source | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sources | flume-taildir-source | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-ng-sources | flume-twitter-source | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-shared | flume-shared-kafka | 1.9.0-cdh6.3.2 |
| | org.apache. flume. flume-shared | flume-shared-kafka-test | 1.9.0-cdh6.3.2 |
| GCS Connector | com.google. cloud. bigdataoss | gcs-connector | hadoop3-1.9. 10-cdh6.3.2 |
| | com.google. cloud. bigdataoss | gcsio | 1.9.10-cdh6.3. 2 |
| | com.google. cloud. bigdataoss | util | 1.9.10-cdh6.3. 2 |
| | com.google. cloud. bigdataoss | util-hadoop | hadoop3-1.9. 10-cdh6.3.2 |

| Project | groupId | artifactId | version |
|---------------|-------------------|---------------------------------|----------------|
| Apache Hadoop | org.apache.hadoop | hadoop-aliyun | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-annotations | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-archive-logs | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-archives | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-assemblies | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-auth | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-aws | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-azure | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-azure-datalake | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.3.2 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------------------|----------------|
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-hdfs-httpfs | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.3.2 |

| Project | groupId | artifactId | version |
|---------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.3.2 |

| Project | groupId | artifactId | version |
|--------------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.3.2 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.3.2 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-checkstyle | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-client | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-client-project | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-common | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-endpoint | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-examples | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-external-blockcache | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-hadoop-compat | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-http | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-it | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-mapreduce | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-metrics | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-metrics-api | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-procedure | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-protocol | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-protocol-shaded | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-replication | 2.1.0-cdh6.3.2 |

| Project | groupId | artifactId | version |
|---------------|------------------|--------------------------------|----------------|
| | org.apache.hbase | hbase-resource-bundle | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-rest | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-rsgroup | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-server | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-shaded-client | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-shaded-client-project | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-shell | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-spark | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-spark-it | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-testing-util | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-thrift | 2.1.0-cdh6.3.2 |
| | org.apache.hbase | hbase-zookeeper | 2.1.0-cdh6.3.2 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.3.2 |

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| | com.ngdata | hbase-sep-impl | 1.5-cdh6.3.2 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.3.2 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-cli | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-hpysql | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-kryo-registrator | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.3.2 |

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| | org.apache.hive | hive-service | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.3.2 |
| | org.apache.hive | hive-testutils | 2.1.1-cdh6.3.2 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.3.2 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.3.2 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.3.2 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.3.2 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.3.2 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.3.2 |
| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.3.2 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.3.2 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.3.2 |
| Apache Kafka | org.apache.kafka | connect-api | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | connect-basic-auth-extension | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | connect-file | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | connect-json | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | connect-runtime | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | connect-transforms | 2.2.1-cdh6.3.2 |

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| | org.apache.kafka | kafka-clients | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka-examples | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka-log4j-appender | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka-streams | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka-streams-examples | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka-streams-scala_2.11 | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka-streams-scala_2.12 | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka-streams-test-utils | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka-tools | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka_2.11 | 2.2.1-cdh6.3.2 |
| | org.apache.kafka | kafka_2.12 | 2.2.1-cdh6.3.2 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.3.2 |

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| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.3.2 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.3.2 |
| Apache Kudu | org.apache.kudu | kudu-backup-tools | 1.10.0-cdh6.3.2 |
| | org.apache.kudu | kudu-backup2_2.11 | 1.10.0-cdh6.3.2 |
| | org.apache.kudu | kudu-client | 1.10.0-cdh6.3.2 |
| | org.apache.kudu | kudu-client-tools | 1.10.0-cdh6.3.2 |
| | org.apache.kudu | kudu-flume-sink | 1.10.0-cdh6.3.2 |
| | org.apache.kudu | kudu-hive | 1.10.0-cdh6.3.2 |
| | org.apache.kudu | kudu-mapreduce | 1.10.0-cdh6.3.2 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.10.0-cdh6.3.2 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.10.0-cdh6.3.2 |
| | org.apache.kudu | kudu-test-utils | 1.10.0-cdh6.3.2 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-core | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-examples | 5.1.0-cdh6.3.2 |

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| | org.apache.oozie | oozie-fluent-job-api | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-fluent-job-client | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-server | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-git | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-hive | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-pig | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-spark | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.1.0-cdh6.3.2 |
| | org.apache.oozie | oozie-tools | 5.1.0-cdh6.3.2 |
| | org.apache.oozie.test | oozie-mini | 5.1.0-cdh6.3.2 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.3.2 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.3.2 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.3.2 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.3.2 |
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.3.2 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.3.2 |

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| Apache Sentry | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.3.2 |
| | org.apache.sentry | sentry-binding-hbase-indexer | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-binding-hive | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-binding-hive-common | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-binding-hive-follower | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-binding-kafka | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-binding-solr | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-core-common | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-core-model-db | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-core-model-indexer | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-core-model-kafka | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-core-model-solr | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-dist | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-hdfs-common | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-hdfs-dist | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-hdfs-service | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-policy-common | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-policy-engine | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-provider-cache | 2.1.0-cdh6.3.2 |

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| | org.apache.sentry | sentry-provider-common | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-provider-db | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-provider-file | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-service-api | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-service-client | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-service-providers | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-service-server | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-service-web | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-shaded | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-spi | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-tests-hive | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-tests-kafka | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-tests-solr | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | sentry-tools | 2.1.0-cdh6.3.2 |
| | org.apache.sentry | solr-sentry-handlers | 2.1.0-cdh6.3.2 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-analyzers-icu | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-analyzers-morfologik | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-analyzers-nori | 7.4.0-cdh6.3.2 |

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| | org.apache.lucene | lucene-analyzers-openssl | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-analyzers-stempel | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-analyzers-uima | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-backward-codecs | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-benchmark | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-classification | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-codecs | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-core | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-demo | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-expressions | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-facet | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-grouping | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-highlighter | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-join | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-memory | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-misc | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-queries | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-queryparser | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-replicator | 7.4.0-cdh6.3.2 |

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| | org.apache.lucene | lucene-sandbox | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-spatial | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-spatial-extras | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-spatial3d | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-suggest | 7.4.0-cdh6.3.2 |
| | org.apache.lucene | lucene-test-framework | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-analysis-extras | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-analytics | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-cell | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-clustering | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-core | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-dataimporthandler | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-jetty-customizations | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-langid | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-ltr | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-prometheus-exporter | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-security-util | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-sentry-audit-logging | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-solrj | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-test-framework | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-uima | 7.4.0-cdh6.3.2 |
| | org.apache.solr | solr-velocity | 7.4.0-cdh6.3.2 |
| Apache Spark | org.apache.spark | spark-avro_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-catalyst_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-core_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-graphx_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.4.0-cdh6.3.2 |

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| | org.apache.spark | spark-hive_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-kubernetes_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-kvstore_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-launcher_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-mllib_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-network-common_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-repl_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-sketch_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-sql_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-streaming_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-tags_2.11 | 2.4.0-cdh6.3.2 |
| | org.apache.spark | spark-unsafe_2.11 | 2.4.0-cdh6.3.2 |

| Project | groupId | artifactId | version |
|------------------|----------------------|-----------------|----------------|
| | org.apache.spark | spark-yarn_2.11 | 2.4.0-cdh6.3.2 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.3.2 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.3.2 |

CDH 6.3.1

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|---------------|-------------------|-------------------------|-----------------|
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.3.1 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.3.1 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.3.1 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.3.1 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.3.1 |
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.3.1 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.3.1 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.3.1 |
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.3.1 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.3.1 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.3.1 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.3.1 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.3.1 |
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.3.1 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.3.1 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|------------------|---|--------------------------------|-----------------|
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.3.1 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.3.1 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.3.1 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.3.1 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.3.1 |
| Apache Flume 1.x | org.apache.flume | flume-ng-auth | 1.9.0-cdh6.3.1 |
| | org.apache.flume | flume-ng-configuration | 1.9.0-cdh6.3.1 |
| | org.apache.flume | flume-ng-core | 1.9.0-cdh6.3.1 |
| | org.apache.flume | flume-ng-embedded-agent | 1.9.0-cdh6.3.1 |
| | org.apache.flume | flume-ng-node | 1.9.0-cdh6.3.1 |
| | org.apache.flume | flume-ng-sdk | 1.9.0-cdh6.3.1 |
| | org.apache.flume | flume-ng-tests | 1.9.0-cdh6.3.1 |
| | org.apache.flume | flume-tools | 1.9.0-cdh6.3.1 |
| | org.apache.flume.flume-ng-channels | flume-file-channel | 1.9.0-cdh6.3.1 |
| | org.apache.flume.flume-ng-channels | flume-jdbc-channel | 1.9.0-cdh6.3.1 |
| | org.apache.flume.flume-ng-channels | flume-kafka-channel | 1.9.0-cdh6.3.1 |
| | org.apache.flume.flume-ng-channels | flume-spillable-memory-channel | 1.9.0-cdh6.3.1 |
| | org.apache.flume.flume-ng-clients | flume-ng-log4jappender | 1.9.0-cdh6.3.1 |
| | org.apache.flume.flume-ng-configfilters | flume-ng-config-filter-api | 1.9.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|---------|---|--|----------------|
| | org.apache. flume. flume-ng-configfilters | flume-ng-environment-variable-config-filter | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-external-process-config-filter | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-hadoop-credential-store-config-filter | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sources | flume-avro-source | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sources | flume-thrift-source | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sinks | flume-dataset-sink | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sinks | flume-hdfs-sink | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sources | flume-kafka-source | 1.9.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|---------------|---|-------------------------|-----------------------------|
| | org.apache. flume. flume-ng-sources | flume-scribe-source | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sources | flume-taildir-source | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-ng-sources | flume-twitter-source | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-shared | flume-shared-kafka | 1.9.0-cdh6.3.1 |
| | org.apache. flume. flume-shared | flume-shared-kafka-test | 1.9.0-cdh6.3.1 |
| GCS Connector | com.google. cloud. bigdataoss | gcs-connector | hadoop3-1.9. 10-cdh6.3.1 |
| | com.google. cloud. bigdataoss | gcsio | 1.9.10-cdh6.3. 1 |
| | com.google. cloud. bigdataoss | util | 1.9.10-cdh6.3. 1 |
| | com.google. cloud. bigdataoss | util-hadoop | hadoop3-1.9. 10-cdh6.3.1 |
| Apache Hadoop | org.apache. hadoop | hadoop-aliyun | 3.0.0-cdh6.3.1 |
| | org.apache. hadoop | hadoop-annotations | 3.0.0-cdh6.3.1 |
| | org.apache. hadoop | hadoop-archive-logs | 3.0.0-cdh6.3.1 |
| | org.apache. hadoop | hadoop-archives | 3.0.0-cdh6.3.1 |
| | org.apache. hadoop | hadoop-assemblies | 3.0.0-cdh6.3.1 |
| | org.apache. hadoop | hadoop-auth | 3.0.0-cdh6.3.1 |
| | org.apache. hadoop | hadoop-aws | 3.0.0-cdh6.3.1 |
| | org.apache. hadoop | hadoop-azure | 3.0.0-cdh6.3.1 |
| | org.apache. hadoop | hadoop-azure-datalake | 3.0.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|---------------------------------|----------------|
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-hdfs-httpfs | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|--------------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.3.1 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.3.1 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-checkstyle | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-client | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-client-project | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-common | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-endpoint | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-examples | 2.1.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|---------|------------------|--------------------------------|----------------|
| | org.apache.hbase | hbase-external-blockcache | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-hadoop-compat | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-http | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-it | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-mapreduce | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-metrics | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-metrics-api | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-procedure | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-protocol | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-protocol-shaded | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-replication | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-resource-bundle | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-rest | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-rsgroup | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-server | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-shaded-client | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-shaded-client-project | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-shell | 2.1.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|---------------|------------------|--------------------------|----------------|
| | org.apache.hbase | hbase-spark | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-spark-it | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-testing-util | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-thrift | 2.1.0-cdh6.3.1 |
| | org.apache.hbase | hbase-zookeeper | 2.1.0-cdh6.3.1 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.3.1 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.3.1 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-cli | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.3.1 |

| Project | groupId | artifactId | version |
|---------|--------------------------|---------------------------------|----------------|
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-hplsql | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-kryo-registrator | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.3.1 |
| | org.apache.hive | hive-testutils | 2.1.1-cdh6.3.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.3.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.3.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.3.1 |

| Project | groupId | artifactId | version |
|--------------|--------------------------|------------------------------|----------------|
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.3.1 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.3.1 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.3.1 |
| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.3.1 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.3.1 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.3.1 |
| Apache Kafka | org.apache.kafka | connect-api | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | connect-basic-auth-extension | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | connect-file | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | connect-json | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | connect-runtime | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | connect-transforms | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka-clients | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka-examples | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka-log4j-appender | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka-streams | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka-streams-examples | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka-streams-scala_2.11 | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka-streams-scala_2.12 | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka-streams-test-utils | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka-tools | 2.2.1-cdh6.3.1 |

| Project | groupId | artifactId | version |
|-------------|------------------|-------------------------------------|-----------------|
| | org.apache.kafka | kafka_2.11 | 2.2.1-cdh6.3.1 |
| | org.apache.kafka | kafka_2.12 | 2.2.1-cdh6.3.1 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.3.1 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.3.1 |
| Apache Kudu | org.apache.kudu | kudu-backup-tools | 1.10.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|--------------|------------------|-------------------------|-----------------|
| | org.apache.kudu | kudu-backup2_2.11 | 1.10.0-cdh6.3.1 |
| | org.apache.kudu | kudu-client | 1.10.0-cdh6.3.1 |
| | org.apache.kudu | kudu-client-tools | 1.10.0-cdh6.3.1 |
| | org.apache.kudu | kudu-flume-sink | 1.10.0-cdh6.3.1 |
| | org.apache.kudu | kudu-hive | 1.10.0-cdh6.3.1 |
| | org.apache.kudu | kudu-mapreduce | 1.10.0-cdh6.3.1 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.10.0-cdh6.3.1 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.10.0-cdh6.3.1 |
| | org.apache.kudu | kudu-test-utils | 1.10.0-cdh6.3.1 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-core | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-examples | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-fluent-job-api | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-fluent-job-client | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-server | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-sharelib-git | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-sharelib-hive | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.1.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|-----------------|-----------------------|------------------------------|-----------------|
| | org.apache.oozie | oozie-sharelib-pig | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-sharelib-spark | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.1.0-cdh6.3.1 |
| | org.apache.oozie | oozie-tools | 5.1.0-cdh6.3.1 |
| | org.apache.oozie.test | oozie-mini | 5.1.0-cdh6.3.1 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.3.1 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.3.1 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.3.1 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.3.1 |
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.3.1 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.3.1 |
| | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.3.1 |
| Apache Sentry | org.apache.sentry | sentry-binding-hbase-indexer | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-binding-hive | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-binding-hive-common | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-binding-hive-follower | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-binding-kafka | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-binding-solr | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-core-common | 2.1.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|-----------------------------|----------------|
| | org.apache.sentry | sentry-core-model-db | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-core-model-indexer | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-core-model-kafka | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-core-model-solr | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-dist | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-hdfs-common | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-hdfs-dist | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-hdfs-service | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-policy-common | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-policy-engine | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-provider-cache | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-provider-common | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-provider-db | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-provider-file | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-service-api | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-service-client | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-service-providers | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-service-server | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-service-web | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-shaded | 2.1.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|-------------|-------------------|-----------------------------|----------------|
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-spi | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-tests-hive | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-tests-kafka | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-tests-solr | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | sentry-tools | 2.1.0-cdh6.3.1 |
| | org.apache.sentry | solr-sentry-handlers | 2.1.0-cdh6.3.1 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-analyzers-icu | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-analyzers-morfologik | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-analyzers-nori | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-analyzers-openssl | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-analyzers-stempel | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-analyzers-uima | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-backward-codecs | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-benchmark | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-classification | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-codecs | 7.4.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------|----------------|
| | org.apache.lucene | lucene-core | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-demo | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-expressions | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-facet | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-grouping | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-highlighter | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-join | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-memory | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-misc | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-queries | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-queryparser | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-replicator | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-sandbox | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-spatial | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-spatial-extras | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-spatial3d | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-suggest | 7.4.0-cdh6.3.1 |
| | org.apache.lucene | lucene-test-framework | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-analysis-extras | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-analytics | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-cell | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-clustering | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-core | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-dataimporthandler | 7.4.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|--------------|------------------|-------------------------------|----------------|
| | org.apache.solr | solr-dataimporthandler-extras | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-jetty-customizations | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-langid | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-ltr | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-prometheus-exporter | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-security-util | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-sentry-audit-logging | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-solrj | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-test-framework | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-uima | 7.4.0-cdh6.3.1 |
| | org.apache.solr | solr-velocity | 7.4.0-cdh6.3.1 |
| Apache Spark | org.apache.spark | spark-avro_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-catalyst_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-core_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-graphx_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-hive_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-kubernetes_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-kvstore_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-launcher_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-mllib_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-network-common_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-repl_2.11 | 2.4.0-cdh6.3.1 |

| Project | groupId | artifactId | version |
|------------------|----------------------|--|----------------|
| | org.apache.spark | spark-sketch_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-sql_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-streaming_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-tags_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-unsafe_2.11 | 2.4.0-cdh6.3.1 |
| | org.apache.spark | spark-yarn_2.11 | 2.4.0-cdh6.3.1 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.3.1 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.3.1 |

CDH 6.3.0

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|-------------|-----------------|-------------------------|----------------|
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.3.0 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.3.0 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.3.0 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.3.0 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.3.0 |

| Project | groupId | artifactId | version |
|------------------|-------------------|-------------------------|-----------------|
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.3.0 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.3.0 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.3.0 |
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.3.0 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.3.0 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.3.0 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.3.0 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.3.0 |
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.3.0 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.3.0 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.3.0 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.3.0 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.3.0 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.3.0 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.3.0 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.3.0 |
| Apache Flume 1.x | org.apache.flume | flume-ng-auth | 1.9.0-cdh6.3.0 |
| | org.apache.flume | flume-ng-configuration | 1.9.0-cdh6.3.0 |
| | org.apache.flume | flume-ng-core | 1.9.0-cdh6.3.0 |
| | org.apache.flume | flume-ng-embedded-agent | 1.9.0-cdh6.3.0 |
| | org.apache.flume | flume-ng-node | 1.9.0-cdh6.3.0 |

| Project | groupId | artifactId | version |
|---------|---|--|----------------|
| | org.apache.flume | flume-ng-sdk | 1.9.0-cdh6.3.0 |
| | org.apache.flume | flume-ng-tests | 1.9.0-cdh6.3.0 |
| | org.apache.flume | flume-tools | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-channels | flume-file-channel | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-channels | flume-jdbc-channel | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-channels | flume-kafka-channel | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-channels | flume-spillable-memory-channel | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-clients | flume-ng-log4jappender | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-configfilters | flume-ng-config-filter-api | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-configfilters | flume-ng-environment-variable-config-filter | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-configfilters | flume-ng-external-process-config-filter | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-configfilters | flume-ng-hadoop-credential-store-config-filter | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-sources | flume-avro-source | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-sources | flume-thrift-source | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-sinks | flume-dataset-sink | 1.9.0-cdh6.3.0 |
| | org.apache.flume.flume-ng-sinks | flume-hdfs-sink | 1.9.0-cdh6.3.0 |

| Project | groupId | artifactId | version |
|---------------|---|------------------------------|-----------------------------|
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sources | flume-kafka-source | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sources | flume-scribe-source | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sources | flume-taildir-source | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-ng-sources | flume-twitter-source | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-shared | flume-shared-kafka | 1.9.0-cdh6.3.0 |
| | org.apache. flume. flume-shared | flume-shared-kafka-test | 1.9.0-cdh6.3.0 |
| GCS Connector | com.google. cloud. bigdataoss | gcs-connector | hadoop3-1.9. 10-cdh6.3.0 |
| | com.google. cloud. bigdataoss | gcsio | 1.9.10-cdh6.3. 0 |

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| | com.google.cloud.bigdataoss | util | 1.9.10-cdh6.3.0 |
| | com.google.cloud.bigdataoss | util-hadoop | hadoop3-1.9.10-cdh6.3.0 |
| Apache Hadoop | org.apache.hadoop | hadoop-aliyun | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-annotations | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-archive-logs | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-archives | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-assemblies | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-auth | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-aws | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-azure | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-azure-datalake | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.3.0 |

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| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-hdfs-https | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.3.0 |

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| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.3.0 |

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| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.3.0 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.3.0 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-checkstyle | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-client | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-client-project | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-common | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-endpoint | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-examples | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-external-blockcache | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-hadoop-compat | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-http | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-it | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-mapreduce | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-metrics | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-metrics-api | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-procedure | 2.1.0-cdh6.3.0 |

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| | org.apache.hbase | hbase-protocol | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-protocol-shaded | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-replication | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-resource-bundle | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-rest | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-rsgroup | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-server | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-shaded-client | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-shaded-client-project | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-shell | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-spark | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-spark-it | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-testing-util | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-thrift | 2.1.0-cdh6.3.0 |
| | org.apache.hbase | hbase-zookeeper | 2.1.0-cdh6.3.0 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.3.0 |

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| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.3.0 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.3.0 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-cli | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-hplsql | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-kryo-registrator | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.3.0 |

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| | org.apache.hive | hive-metastore | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.3.0 |
| | org.apache.hive | hive-testutils | 2.1.1-cdh6.3.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.3.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.3.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.3.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.3.0 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.3.0 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.3.0 |
| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.3.0 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.3.0 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.3.0 |
| Apache Kafka | org.apache.kafka | connect-api | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | connect-basic-auth-extension | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | connect-file | 2.2.1-cdh6.3.0 |

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| | org.apache.kafka | connect-json | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | connect-runtime | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | connect-transforms | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka-clients | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka-examples | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka-log4j-appender | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka-streams | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka-streams-examples | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka-streams-scala_2.11 | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka-streams-scala_2.12 | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka-streams-test-utils | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka-tools | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka_2.11 | 2.2.1-cdh6.3.0 |
| | org.apache.kafka | kafka_2.12 | 2.2.1-cdh6.3.0 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.3.0 |

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| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.3.0 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.3.0 |
| Apache Kudu | org.apache.kudu | kudu-backup-tools | 1.10.0-cdh6.3.0 |
| | org.apache.kudu | kudu-backup2_2.11 | 1.10.0-cdh6.3.0 |
| | org.apache.kudu | kudu-client | 1.10.0-cdh6.3.0 |
| | org.apache.kudu | kudu-client-tools | 1.10.0-cdh6.3.0 |
| | org.apache.kudu | kudu-flume-sink | 1.10.0-cdh6.3.0 |
| | org.apache.kudu | kudu-hive | 1.10.0-cdh6.3.0 |
| | org.apache.kudu | kudu-mapreduce | 1.10.0-cdh6.3.0 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.10.0-cdh6.3.0 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.10.0-cdh6.3.0 |
| | org.apache.kudu | kudu-test-utils | 1.10.0-cdh6.3.0 |

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| Apache Oozie | org.apache.oozie | oozie-client | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-core | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-examples | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-fluent-job-api | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-fluent-job-client | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-server | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-git | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-hive | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-pig | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-spark | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.1.0-cdh6.3.0 |
| | org.apache.oozie | oozie-tools | 5.1.0-cdh6.3.0 |
| | org.apache.oozie.test | oozie-mini | 5.1.0-cdh6.3.0 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.3.0 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.3.0 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.3.0 |

| Project | groupId | artifactId | version |
|-----------------|---------------------|------------------------------|-----------------|
| | org.apache.pig | pigunit | 0.17.0-cdh6.3.0 |
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.3.0 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.3.0 |
| | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.3.0 |
| Apache Sentry | org.apache.sentry | sentry-binding-hbase-indexer | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-binding-hive | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-binding-hive-common | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-binding-hive-follower | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-binding-kafka | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-binding-solr | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-core-common | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-core-model-db | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-core-model-indexer | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-core-model-kafka | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-core-model-solr | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-dist | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-hdfs-common | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-hdfs-dist | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-hdfs-service | 2.1.0-cdh6.3.0 |

| Project | groupId | artifactId | version |
|-------------|-------------------|-----------------------------|----------------|
| | org.apache.sentry | sentry-policy-common | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-policy-engine | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-provider-cache | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-provider-common | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-provider-db | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-provider-file | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-service-api | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-service-client | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-service-providers | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-service-server | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-service-web | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-shaded | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-spi | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-tests-hive | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-tests-kafka | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-tests-solr | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | sentry-tools | 2.1.0-cdh6.3.0 |
| | org.apache.sentry | solr-sentry-handlers | 2.1.0-cdh6.3.0 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-analyzers-icu | 7.4.0-cdh6.3.0 |

| Project | groupId | artifactId | version |
|---------|-------------------|-----------------------------|----------------|
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-analyzers-morfologik | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-analyzers-nori | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-analyzers-openssl | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-analyzers-stempel | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-analyzers-uima | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-backward-codecs | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-benchmark | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-classification | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-codecs | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-core | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-demo | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-expressions | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-facet | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-grouping | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-highlighter | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-join | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-memory | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-misc | 7.4.0-cdh6.3.0 |

| Project | groupId | artifactId | version |
|--------------|-------------------|-------------------------------|----------------|
| | org.apache.lucene | lucene-queries | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-queryparser | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-replicator | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-sandbox | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-spatial | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-spatial-extras | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-spatial3d | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-suggest | 7.4.0-cdh6.3.0 |
| | org.apache.lucene | lucene-test-framework | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-analysis-extras | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-analytics | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-cell | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-clustering | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-core | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-dataimporthandler | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-jetty-customizations | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-langid | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-ltr | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-prometheus-exporter | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-security-util | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-sentry-audit-logging | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-solrj | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-test-framework | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-uima | 7.4.0-cdh6.3.0 |
| | org.apache.solr | solr-velocity | 7.4.0-cdh6.3.0 |
| Apache Spark | org.apache.spark | spark-avro_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-catalyst_2.11 | 2.4.0-cdh6.3.0 |

| Project | groupId | artifactId | version |
|---------|------------------|--|----------------|
| | org.apache.spark | spark-core_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-graphx_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-hive_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-kubernetes_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-kvstore_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-launcher_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-mllib_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-network-common_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-repl_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-sketch_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-sql_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.4.0-cdh6.3.0 |

| Project | groupId | artifactId | version |
|------------------|----------------------|----------------------|----------------|
| | org.apache.spark | spark-streaming_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-tags_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-unsafe_2.11 | 2.4.0-cdh6.3.0 |
| | org.apache.spark | spark-yarn_2.11 | 2.4.0-cdh6.3.0 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.3.0 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.3.0 |

Maven Artifacts for CDH 6.2.x Releases

CDH 6.2.1

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|---------------|-------------------|-------------------------|-----------------|
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.2.1 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.2.1 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.2.1 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.2.1 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.2.1 |
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.2.1 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.2.1 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.2.1 |
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.2.1 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.2.1 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.2.1 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.2.1 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.2.1 |

| Project | groupId | artifactId | version |
|------------------|------------------------------------|--------------------------------|-----------------|
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.2.1 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.2.1 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.2.1 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.2.1 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.2.1 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.2.1 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.2.1 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.2.1 |
| Apache Flume 1.x | org.apache.flume | flume-ng-auth | 1.9.0-cdh6.2.1 |
| | org.apache.flume | flume-ng-configuration | 1.9.0-cdh6.2.1 |
| | org.apache.flume | flume-ng-core | 1.9.0-cdh6.2.1 |
| | org.apache.flume | flume-ng-embedded-agent | 1.9.0-cdh6.2.1 |
| | org.apache.flume | flume-ng-node | 1.9.0-cdh6.2.1 |
| | org.apache.flume | flume-ng-sdk | 1.9.0-cdh6.2.1 |
| | org.apache.flume | flume-ng-tests | 1.9.0-cdh6.2.1 |
| | org.apache.flume | flume-tools | 1.9.0-cdh6.2.1 |
| | org.apache.flume.flume-ng-channels | flume-file-channel | 1.9.0-cdh6.2.1 |
| | org.apache.flume.flume-ng-channels | flume-jdbc-channel | 1.9.0-cdh6.2.1 |
| | org.apache.flume.flume-ng-channels | flume-kafka-channel | 1.9.0-cdh6.2.1 |
| | org.apache.flume.flume-ng-channels | flume-spillable-memory-channel | 1.9.0-cdh6.2.1 |

| Project | groupId | artifactId | version |
|---------|---|--|----------------|
| | org.apache. flume. flume-ng-clients | flume-ng-log4jappender | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-config-filter-api | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-environment-variable-config-filter | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-external-process-config-filter | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-configfilters | flume-ng-hadoop-credential-store-config-filter | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sources | flume-avro-source | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sources | flume-thrift-source | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sinks | flume-dataset-sink | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sinks | flume-hdfs-sink | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.9.0-cdh6.2.1 |

| Project | groupId | artifactId | version |
|---------------|---|-------------------------|-----------------------------|
| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sources | flume-kafka-source | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sources | flume-scribe-source | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sources | flume-taildir-source | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-ng-sources | flume-twitter-source | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-shared | flume-shared-kafka | 1.9.0-cdh6.2.1 |
| | org.apache. flume. flume-shared | flume-shared-kafka-test | 1.9.0-cdh6.2.1 |
| GCS Connector | com.google. cloud. bigdataoss | gcs-connector | hadoop3-1.9. 10-cdh6.2.1 |
| | com.google. cloud. bigdataoss | gcsio | 1.9.10-cdh6.2. 1 |
| | com.google. cloud. bigdataoss | util | 1.9.10-cdh6.2. 1 |
| | com.google. cloud. bigdataoss | util-hadoop | hadoop3-1.9. 10-cdh6.2.1 |
| Apache Hadoop | org.apache. hadoop | hadoop-aliyun | 3.0.0-cdh6.2.1 |
| | org.apache. hadoop | hadoop-annotations | 3.0.0-cdh6.2.1 |
| | org.apache. hadoop | hadoop-archive-logs | 3.0.0-cdh6.2.1 |
| | org.apache. hadoop | hadoop-archives | 3.0.0-cdh6.2.1 |
| | org.apache. hadoop | hadoop-assemblies | 3.0.0-cdh6.2.1 |
| | org.apache. hadoop | hadoop-auth | 3.0.0-cdh6.2.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|---------------------------------|----------------|
| | org.apache.hadoop | hadoop-aws | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-azure | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-azure-datalake | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-hdfs-https | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.2.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------------------|----------------|
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.2.1 |

| Project | groupId | artifactId | version |
|--------------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.2.1 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.2.1 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-checkstyle | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-client | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-client-project | 2.1.0-cdh6.2.1 |

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| | org.apache.hbase | hbase-common | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-endpoint | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-error-prone | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-examples | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-external-blockcache | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-hadoop-compat | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-http | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-it | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-mapreduce | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-metrics | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-metrics-api | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-procedure | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-protocol | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-protocol-shaded | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-replication | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-resource-bundle | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-rest | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-rsgroup | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-server | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-shaded-client | 2.1.0-cdh6.2.1 |

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| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-shaded-client-project | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-shell | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-spark | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-spark-it | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-testing-util | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-thrift | 2.1.0-cdh6.2.1 |
| | org.apache.hbase | hbase-zookeeper | 2.1.0-cdh6.2.1 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.2.1 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.2.1 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.2.1 |

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| | org.apache.hive | hive-cli | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-hplsql | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-kryo-registrator | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.2.1 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.2.1 |

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| | org.apache.hive | hive-testutils | 2.1.1-cdh6.2.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.2.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.2.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.2.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.2.1 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.2.1 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.2.1 |
| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.2.1 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.2.1 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.2.1 |
| Apache Kafka | org.apache.kafka | connect-api | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | connect-basic-auth-extension | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | connect-file | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | connect-json | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | connect-runtime | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | connect-transforms | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka-clients | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka-examples | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka-log4j-appender | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka-streams | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka-streams-examples | 2.1.0-cdh6.2.1 |

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| | org.apache.kafka | kafka-streams-scala_2.11 | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka-streams-scala_2.12 | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka-streams-test-utils | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka-tools | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka_2.11 | 2.1.0-cdh6.2.1 |
| | org.apache.kafka | kafka_2.12 | 2.1.0-cdh6.2.1 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.2.1 |

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| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.2.1 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.2.1 |
| Apache Kudu | org.apache.kudu | kudu-client | 1.9.0-cdh6.2.1 |
| | org.apache.kudu | kudu-client-tools | 1.9.0-cdh6.2.1 |
| | org.apache.kudu | kudu-flume-sink | 1.9.0-cdh6.2.1 |
| | org.apache.kudu | kudu-mapreduce | 1.9.0-cdh6.2.1 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.9.0-cdh6.2.1 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.9.0-cdh6.2.1 |
| | org.apache.kudu | kudu-test-utils | 1.9.0-cdh6.2.1 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-core | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-examples | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-fluent-job-api | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-fluent-job-client | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-server | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-sharelib-git | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-sharelib-hive | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.1.0-cdh6.2.1 |

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| | org.apache.oozie | oozie-sharelib-oozie | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-sharelib-pig | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-sharelib-spark | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.1.0-cdh6.2.1 |
| | org.apache.oozie | oozie-tools | 5.1.0-cdh6.2.1 |
| | org.apache.oozie.test | oozie-mini | 5.1.0-cdh6.2.1 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.2.1 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.2.1 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.2.1 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.2.1 |
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.2.1 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.2.1 |
| | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.2.1 |
| Apache Sentry | org.apache.sentry | sentry-binding-hbase-indexer | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-binding-hive | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-binding-hive-common | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-binding-hive-follower | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-binding-kafka | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-binding-solr | 2.1.0-cdh6.2.1 |

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| | org.apache.sentry | sentry-core-common | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-core-model-db | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-core-model-indexer | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-core-model-kafka | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-core-model-solr | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-dist | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-hdfs-common | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-hdfs-dist | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-hdfs-service | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-policy-common | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-policy-engine | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-provider-cache | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-provider-common | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-provider-db | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-provider-file | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-service-api | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-service-client | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-service-providers | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-service-server | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-service-web | 2.1.0-cdh6.2.1 |

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| | org.apache.sentry | sentry-shaded | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-spi | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-tests-hive | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-tests-kafka | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-tests-solr | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | sentry-tools | 2.1.0-cdh6.2.1 |
| | org.apache.sentry | solr-sentry-handlers | 2.1.0-cdh6.2.1 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-analyzers-icu | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-analyzers-morfologik | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-analyzers-nori | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-analyzers-openssl | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-analyzers-stempel | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-analyzers-uima | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-backward-codecs | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-benchmark | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-classification | 7.4.0-cdh6.2.1 |

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| | org.apache.lucene | lucene-codecs | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-core | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-demo | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-expressions | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-facet | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-grouping | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-highlighter | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-join | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-memory | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-misc | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-queries | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-queryparser | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-replicator | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-sandbox | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-spatial | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-spatial-extras | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-spatial3d | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-suggest | 7.4.0-cdh6.2.1 |
| | org.apache.lucene | lucene-test-framework | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-analysis-extras | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-analytics | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-cell | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-clustering | 7.4.0-cdh6.2.1 |

| Project | groupId | artifactId | version |
|--------------|------------------|-------------------------------|----------------|
| | org.apache.solr | solr-core | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-dataimporthandler | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-jetty-customizations | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-langid | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-ltr | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-prometheus-exporter | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-security-util | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-sentry-audit-logging | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-solrj | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-test-framework | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-uima | 7.4.0-cdh6.2.1 |
| | org.apache.solr | solr-velocity | 7.4.0-cdh6.2.1 |
| Apache Spark | org.apache.spark | spark-avro_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-catalyst_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-core_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-graphx_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-hive_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-kubernetes_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-kvstore_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-launcher_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-mllib_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-network-common_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.4.0-cdh6.2.1 |

| Project | groupId | artifactId | version |
|------------------|----------------------|--|----------------|
| | org.apache.spark | spark-network-yarn_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-repl_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-sketch_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-sql_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-streaming_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-tags_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-unsafe_2.11 | 2.4.0-cdh6.2.1 |
| | org.apache.spark | spark-yarn_2.11 | 2.4.0-cdh6.2.1 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.2.1 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.2.1 |

CDH 6.2.0

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|-------------|-----------------|-------------------------|----------------|
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.2.0 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.2.0 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.2.0 |

| Project | groupId | artifactId | version |
|------------------|-------------------|------------------------|-----------------|
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.2.0 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.2.0 |
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.2.0 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.2.0 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.2.0 |
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.2.0 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.2.0 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.2.0 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.2.0 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.2.0 |
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.2.0 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.2.0 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.2.0 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.2.0 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.2.0 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.2.0 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.2.0 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.2.0 |
| Apache Flume 1.x | org.apache.flume | flume-ng-auth | 1.9.0-cdh6.2.0 |
| | org.apache.flume | flume-ng-configuration | 1.9.0-cdh6.2.0 |
| | org.apache.flume | flume-ng-core | 1.9.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|---------|---|--|----------------|
| | org.apache.flume | flume-ng-embedded-agent | 1.9.0-cdh6.2.0 |
| | org.apache.flume | flume-ng-node | 1.9.0-cdh6.2.0 |
| | org.apache.flume | flume-ng-sdk | 1.9.0-cdh6.2.0 |
| | org.apache.flume | flume-ng-tests | 1.9.0-cdh6.2.0 |
| | org.apache.flume | flume-tools | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-channels | flume-file-channel | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-channels | flume-jdbc-channel | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-channels | flume-kafka-channel | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-channels | flume-spillable-memory-channel | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-clients | flume-ng-log4jappender | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-configfilters | flume-ng-config-filter-api | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-configfilters | flume-ng-environment-variable-config-filter | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-configfilters | flume-ng-external-process-config-filter | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-configfilters | flume-ng-hadoop-credential-store-config-filter | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-sources | flume-avro-source | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-sources | flume-thrift-source | 1.9.0-cdh6.2.0 |
| | org.apache.flume.flume-ng-sinks | flume-dataset-sink | 1.9.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|---------------|---|------------------------------|-----------------------------|
| | org.apache. flume. flume-ng-sinks | flume-hdfs-sink | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sources | flume-kafka-source | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sources | flume-scribe-source | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sources | flume-taildir-source | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-ng-sources | flume-twitter-source | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-shared | flume-shared-kafka | 1.9.0-cdh6.2.0 |
| | org.apache. flume. flume-shared | flume-shared-kafka-test | 1.9.0-cdh6.2.0 |
| GCS Connector | com.google. cloud. bigdataoss | gcs-connector | hadoop3-1.9. 10-cdh6.2.0 |

| Project | groupId | artifactId | version |
|---------------|-----------------------------|---------------------------------|-------------------------|
| | com.google.cloud.bigdataoss | gcsio | 1.9.10-cdh6.2.0 |
| | com.google.cloud.bigdataoss | util | 1.9.10-cdh6.2.0 |
| | com.google.cloud.bigdataoss | util-hadoop | hadoop3-1.9.10-cdh6.2.0 |
| Apache Hadoop | org.apache.hadoop | hadoop-aliyun | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-annotations | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-archive-logs | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-archives | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-assemblies | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-auth | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-aws | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-azure | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-azure-datalake | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------------------|----------------|
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-hdfs-https | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|---------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|--------------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.2.0 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.2.0 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-checkstyle | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-client | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-client-project | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-common | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-endpoint | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-error-prone | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-examples | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-external-blockcache | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-hadoop-compat | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-http | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-it | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-mapreduce | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-metrics | 2.1.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|---------------|------------------|--------------------------------|----------------|
| | org.apache.hbase | hbase-metrics-api | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-procedure | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-protocol | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-protocol-shaded | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-replication | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-resource-bundle | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-rest | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-rsgroup | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-server | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-shaded-client | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-shaded-client-project | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-shell | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-spark | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-spark-it | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-testing-util | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-thrift | 2.1.0-cdh6.2.0 |
| | org.apache.hbase | hbase-zookeeper | 2.1.0-cdh6.2.0 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.2.0 |

| Project | groupId | artifactId | version |
|-------------|-----------------|--------------------------|----------------|
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.2.0 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.2.0 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-cli | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-hplsql | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-kryo-registrator | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.2.0 |

| Project | groupId | artifactId | version |
|--------------|--------------------------|---------------------------------|----------------|
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.2.0 |
| | org.apache.hive | hive-testutils | 2.1.1-cdh6.2.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.2.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.2.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.2.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.2.0 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.2.0 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.2.0 |
| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.2.0 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.2.0 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.2.0 |
| Apache Kafka | org.apache.kafka | connect-api | 2.1.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|----------|------------------|------------------------------|----------------|
| | org.apache.kafka | connect-basic-auth-extension | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | connect-file | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | connect-json | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | connect-runtime | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | connect-transforms | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka-clients | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka-examples | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka-log4j-appender | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka-streams | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka-streams-examples | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka-streams-scala_2.11 | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka-streams-scala_2.12 | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka-streams-test-utils | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka-tools | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka_2.11 | 2.1.0-cdh6.2.0 |
| | org.apache.kafka | kafka_2.12 | 2.1.0-cdh6.2.0 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|--------------|------------------|-------------------------------------|----------------|
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.2.0 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.2.0 |
| Apache Kudu | org.apache.kudu | kudu-client | 1.9.0-cdh6.2.0 |
| | org.apache.kudu | kudu-client-tools | 1.9.0-cdh6.2.0 |
| | org.apache.kudu | kudu-flume-sink | 1.9.0-cdh6.2.0 |
| | org.apache.kudu | kudu-mapreduce | 1.9.0-cdh6.2.0 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.9.0-cdh6.2.0 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.9.0-cdh6.2.0 |
| | org.apache.kudu | kudu-test-utils | 1.9.0-cdh6.2.0 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.1.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|------------|-----------------------|--------------------------|-----------------|
| | org.apache.oozie | oozie-core | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-examples | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-fluent-job-api | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-fluent-job-client | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-server | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-git | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-hive | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-pig | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-spark | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.1.0-cdh6.2.0 |
| | org.apache.oozie | oozie-tools | 5.1.0-cdh6.2.0 |
| | org.apache.oozie.test | oozie-mini | 5.1.0-cdh6.2.0 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.2.0 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.2.0 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.2.0 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|-----------------|---------------------|------------------------------|----------------|
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.2.0 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.2.0 |
| | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.2.0 |
| Apache Sentry | org.apache.sentry | sentry-binding-hbase-indexer | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-binding-hive | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-binding-hive-common | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-binding-hive-follower | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-binding-kafka | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-binding-solr | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-core-common | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-core-model-db | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-core-model-indexer | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-core-model-kafka | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-core-model-solr | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-dist | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-hdfs-common | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-hdfs-dist | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-hdfs-service | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-policy-common | 2.1.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|-------------|-------------------|-----------------------------|----------------|
| | org.apache.sentry | sentry-policy-engine | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-provider-cache | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-provider-common | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-provider-db | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-provider-file | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-service-api | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-service-client | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-service-providers | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-service-server | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-service-web | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-shaded | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-spi | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-tests-hive | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-tests-kafka | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-tests-solr | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | sentry-tools | 2.1.0-cdh6.2.0 |
| | org.apache.sentry | solr-sentry-handlers | 2.1.0-cdh6.2.0 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-analyzers-icu | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.4.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|---------|-------------------|-----------------------------|----------------|
| | org.apache.lucene | lucene-analyzers-morfologik | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-analyzers-nori | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-analyzers-openssl | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-analyzers-stempel | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-analyzers-uima | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-backward-codecs | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-benchmark | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-classification | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-codecs | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-core | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-demo | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-expressions | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-facet | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-grouping | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-highlighter | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-join | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-memory | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-misc | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-queries | 7.4.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|--------------|-------------------|-------------------------------|----------------|
| | org.apache.lucene | lucene-queryparser | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-replicator | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-sandbox | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-spatial | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-spatial-extras | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-spatial3d | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-suggest | 7.4.0-cdh6.2.0 |
| | org.apache.lucene | lucene-test-framework | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-analysis-extras | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-analytics | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-cell | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-clustering | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-core | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-dataimporthandler | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-jetty-customizations | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-langid | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-ltr | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-prometheus-exporter | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-security-util | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-sentry-audit-logging | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-solrj | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-test-framework | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-uima | 7.4.0-cdh6.2.0 |
| | org.apache.solr | solr-velocity | 7.4.0-cdh6.2.0 |
| Apache Spark | org.apache.spark | spark-avro_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-catalyst_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-core_2.11 | 2.4.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|---------|------------------|--|----------------|
| | org.apache.spark | spark-graphx_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-hive_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-kubernetes_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-kvstore_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-launcher_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-mllib_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-network-common_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-repl_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-sketch_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-sql_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-streaming_2.11 | 2.4.0-cdh6.2.0 |

| Project | groupId | artifactId | version |
|------------------|----------------------|-------------------|----------------|
| | org.apache.spark | spark-tags_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-unsafe_2.11 | 2.4.0-cdh6.2.0 |
| | org.apache.spark | spark-yarn_2.11 | 2.4.0-cdh6.2.0 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.2.0 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.2.0 |

Maven Artifacts for CDH 6.1.x Releases

CDH 6.1.1

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|---------------|-------------------|-------------------------|-----------------|
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.1.1 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.1.1 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.1.1 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.1.1 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.1.1 |
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.1.1 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.1.1 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.1.1 |
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.1.1 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.1.1 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.1.1 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.1.1 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.1.1 |
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.1.1 |

| Project | groupId | artifactId | version |
|------------------|--|--|-----------------|
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.1.1 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.1.1 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.1.1 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.1.1 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.1.1 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.1.1 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.1.1 |
| Apache Flume 1.x | org.apache.flume | flume-checkstyle | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-auth | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-config-filter-api | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-configuration | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-core | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-embedded-agent | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-environment-variable-config-filter | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-external-process-config-filter | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-hadoop-credential-store-config-filter | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-node | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-sdk | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-ng-tests | 1.8.0-cdh6.1.1 |
| | org.apache.flume | flume-tools | 1.8.0-cdh6.1.1 |
| | org.apache.flume. flume-ng-channels | flume-file-channel | 1.8.0-cdh6.1.1 |

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| | org.apache. flume. flume-ng-channels | flume-jdbc-channel | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-channels | flume-kafka-channel | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-channels | flume-spillable-memory-channel | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-clients | flume-ng-log4jappender | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sources | flume-avro-source | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sources | flume-thrift-source | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sinks | flume-dataset-sink | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sinks | flume-hdfs-sink | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.8.0-cdh6.1.1 |

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| | org.apache. flume. flume-ng-sources | flume-kafka-source | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sources | flume-scribe-source | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sources | flume-taildir-source | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-ng-sources | flume-twitter-source | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-shared | flume-shared-kafka | 1.8.0-cdh6.1.1 |
| | org.apache. flume. flume-shared | flume-shared-kafka-test | 1.8.0-cdh6.1.1 |
| Apache Hadoop | org.apache. hadoop | hadoop-aliyun | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-annotations | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-archive-logs | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-archives | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-assemblies | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-auth | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-aws | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-azure | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-azure-datalake | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-build-tools | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-client | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-client-api | 3.0.0-cdh6.1.1 |
| | org.apache. hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.1.1 |

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| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-hdfs-httpfs | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.1.1 |

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| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.1.1 |

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| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.1.1 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.1.1 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-checkstyle | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-client | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-client-project | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-common | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-endpoint | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-error-prone | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-examples | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-external-blockcache | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-hadoop-compat | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.1.0-cdh6.1.1 |

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| | org.apache.hbase | hbase-http | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-it | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-mapreduce | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-metrics | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-metrics-api | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-procedure | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-protocol | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-protocol-shaded | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-replication | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-resource-bundle | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-rest | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-rsgroup | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-server | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-shaded-client | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-shaded-client-project | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-shell | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-spark | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-spark-it | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-testing-util | 2.1.0-cdh6.1.1 |

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| | org.apache.hbase | hbase-thrift | 2.1.0-cdh6.1.1 |
| | org.apache.hbase | hbase-zookeeper | 2.1.0-cdh6.1.1 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.1.1 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.1.1 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-cli | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-hpsql | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.1.1 |

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| | org.apache.hive | hive-kryo-registrator | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.1.1 |
| | org.apache.hive | hive-testutils | 2.1.1-cdh6.1.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.1.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.1.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.1.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.1.1 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.1.1 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.1.1 |

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| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.1.1 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.1.1 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.1.1 |
| Apache Kafka | org.apache.kafka | connect-api | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | connect-basic-auth-extension | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | connect-file | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | connect-json | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | connect-runtime | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | connect-transforms | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka-clients | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka-examples | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka-log4j-appender | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka-streams | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka-streams-examples | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka-streams-scala_2.11 | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka-streams-scala_2.12 | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka-streams-test-utils | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka-tools | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka_2.11 | 2.0.0-cdh6.1.1 |
| | org.apache.kafka | kafka_2.12 | 2.0.0-cdh6.1.1 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.1.1 |

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| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.1.1 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.1.1 |
| Apache Kudu | org.apache.kudu | kudu-client | 1.8.0-cdh6.1.1 |
| | org.apache.kudu | kudu-client-tools | 1.8.0-cdh6.1.1 |
| | org.apache.kudu | kudu-flume-sink | 1.8.0-cdh6.1.1 |
| | org.apache.kudu | kudu-mapreduce | 1.8.0-cdh6.1.1 |

| Project | groupId | artifactId | version |
|--------------|-----------------------|--------------------------|-----------------|
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.8.0-cdh6.1.1 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.8.0-cdh6.1.1 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-core | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-examples | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-server | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-sharelib-hive | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-sharelib-pig | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-sharelib-spark | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.0.0-cdh6.1.1 |
| | org.apache.oozie | oozie-tools | 5.0.0-cdh6.1.1 |
| | org.apache.oozie.test | oozie-mini | 5.0.0-cdh6.1.1 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.1.1 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.1.1 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.1.1 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.1.1 |

| Project | groupId | artifactId | version |
|-----------------|---------------------|------------------------------|----------------|
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.1.1 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.1.1 |
| | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.1.1 |
| Apache Sentry | org.apache.sentry | sentry-binding-hbase-indexer | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-binding-hive | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-binding-hive-common | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-binding-hive-follower | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-binding-kafka | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-binding-solr | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-core-common | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-core-model-db | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-core-model-indexer | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-core-model-kafka | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-core-model-solr | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-dist | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-hdfs-common | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-hdfs-dist | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-hdfs-service | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-policy-common | 2.1.0-cdh6.1.1 |

| Project | groupId | artifactId | version |
|-------------|-------------------|-----------------------------|----------------|
| | org.apache.sentry | sentry-policy-engine | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-provider-cache | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-provider-common | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-provider-db | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-provider-file | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-service-api | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-service-client | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-service-server | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-shaded | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-spi | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-tests-hive | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-tests-kafka | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-tests-solr | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | sentry-tools | 2.1.0-cdh6.1.1 |
| | org.apache.sentry | solr-sentry-handlers | 2.1.0-cdh6.1.1 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-analyzers-icu | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-analyzers-morfologik | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-analyzers-nori | 7.4.0-cdh6.1.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|---------------------------|----------------|
| | org.apache.lucene | lucene-analyzers-openssl | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-analyzers-stempel | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-analyzers-uima | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-backward-codecs | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-benchmark | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-classification | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-codecs | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-core | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-demo | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-expressions | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-facet | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-grouping | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-highlighter | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-join | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-memory | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-misc | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-queries | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-queryparser | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-replicator | 7.4.0-cdh6.1.1 |

| Project | groupId | artifactId | version |
|--------------|-------------------|-------------------------------|----------------|
| | org.apache.lucene | lucene-sandbox | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-spatial | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-spatial-extras | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-spatial3d | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-suggest | 7.4.0-cdh6.1.1 |
| | org.apache.lucene | lucene-test-framework | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-analysis-extras | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-analytics | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-cell | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-clustering | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-core | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-dataimporthandler | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-jetty-customizations | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-langid | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-ltr | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-prometheus-exporter | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-security-util | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-sentry-audit-logging | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-solrj | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-test-framework | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-uima | 7.4.0-cdh6.1.1 |
| | org.apache.solr | solr-velocity | 7.4.0-cdh6.1.1 |
| Apache Spark | org.apache.spark | spark-avro_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-catalyst_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-core_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-graphx_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.4.0-cdh6.1.1 |

| Project | groupId | artifactId | version |
|---------|------------------|--|----------------|
| | org.apache.spark | spark-hive_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-kvstore_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-launcher_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-mllib_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-network-common_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-repl_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-sketch_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-sql_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-streaming_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-tags_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-unsafe_2.11 | 2.4.0-cdh6.1.1 |
| | org.apache.spark | spark-yarn_2.11 | 2.4.0-cdh6.1.1 |

| Project | groupId | artifactId | version |
|------------------|----------------------|------------|----------------|
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.1.1 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.1.1 |

CDH 6.1.0

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|---------------|-------------------|-------------------------|-----------------|
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.1.0 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.1.0 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.1.0 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.1.0 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.1.0 |
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.1.0 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.1.0 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.1.0 |
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.1.0 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.1.0 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.1.0 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.1.0 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.1.0 |
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.1.0 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.1.0 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.1.0 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.1.0 |

| Project | groupId | artifactId | version |
|------------------|------------------------------------|--|-----------------|
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.1.0 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.1.0 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.1.0 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.1.0 |
| Apache Flume 1.x | org.apache.flume | flume-checkstyle | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-auth | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-config-filter-api | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-configuration | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-core | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-embedded-agent | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-environment-variable-config-filter | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-external-process-config-filter | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-hadoop-credential-store-config-filter | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-node | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-sdk | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-ng-tests | 1.8.0-cdh6.1.0 |
| | org.apache.flume | flume-tools | 1.8.0-cdh6.1.0 |
| | org.apache.flume.flume-ng-channels | flume-file-channel | 1.8.0-cdh6.1.0 |
| | org.apache.flume.flume-ng-channels | flume-jdbc-channel | 1.8.0-cdh6.1.0 |
| | org.apache.flume.flume-ng-channels | flume-kafka-channel | 1.8.0-cdh6.1.0 |

| Project | groupId | artifactId | version |
|---------|--|--------------------------------|----------------|
| | org.apache. flume. flume-ng-channels | flume-spillable-memory-channel | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-clients | flume-ng-log4jappender | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sources | flume-avro-source | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sources | flume-thrift-source | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sinks | flume-dataset-sink | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sinks | flume-hdfs-sink | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sources | flume-kafka-source | 1.8.0-cdh6.1.0 |
| | org.apache. flume. flume-ng-sources | flume-scribe-source | 1.8.0-cdh6.1.0 |

| Project | groupId | artifactId | version |
|---------------|-----------------------------------|---------------------------------|----------------|
| | org.apache.flume.flume-ng-sources | flume-taildir-source | 1.8.0-cdh6.1.0 |
| | org.apache.flume.flume-ng-sources | flume-twitter-source | 1.8.0-cdh6.1.0 |
| | org.apache.flume.flume-shared | flume-shared-kafka | 1.8.0-cdh6.1.0 |
| | org.apache.flume.flume-shared | flume-shared-kafka-test | 1.8.0-cdh6.1.0 |
| Apache Hadoop | org.apache.hadoop | hadoop-aliyun | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-annotations | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-archive-logs | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-archives | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-assemblies | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-auth | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-aws | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-azure | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-azure-datalake | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.1.0 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------------------|----------------|
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-hdfs-https | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.1.0 |

| Project | groupId | artifactId | version |
|---------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.1.0 |

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| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.1.0 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.1.0 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-checkstyle | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-client | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-client-project | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-common | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-endpoint | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-error-prone | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-examples | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-external-blockcache | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-hadoop-compat | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-http | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-it | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-mapreduce | 2.1.0-cdh6.1.0 |

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| | org.apache.hbase | hbase-metrics | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-metrics-api | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-procedure | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-protocol | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-protocol-shaded | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-replication | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-resource-bundle | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-rest | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-rsgroup | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-server | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-shaded-client | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-shaded-client-project | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-shell | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-spark | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-spark-it | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-testing-util | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-thrift | 2.1.0-cdh6.1.0 |
| | org.apache.hbase | hbase-zookeeper | 2.1.0-cdh6.1.0 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.1.0 |

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| | com.ngdata | hbase-indexer-common | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.1.0 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.1.0 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-cli | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-hplsql | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-kryo-registrator | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.1.0 |

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| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.1.0 |
| | org.apache.hive | hive-testutils | 2.1.1-cdh6.1.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.1.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.1.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.1.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.1.0 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.1.0 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.1.0 |
| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.1.0 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.1.0 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.1.0 |

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| Apache Kafka | org.apache.kafka | connect-api | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | connect-basic-auth-extension | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | connect-file | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | connect-json | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | connect-runtime | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | connect-transforms | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka-clients | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka-examples | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka-log4j-appender | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka-streams | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka-streams-examples | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka-streams-scala_2.11 | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka-streams-scala_2.12 | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka-streams-test-utils | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka-tools | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka_2.11 | 2.0.0-cdh6.1.0 |
| | org.apache.kafka | kafka_2.12 | 2.0.0-cdh6.1.0 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.1.0 |

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| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.1.0 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.1.0 |
| Apache Kudu | org.apache.kudu | kudu-client | 1.8.0-cdh6.1.0 |
| | org.apache.kudu | kudu-client-tools | 1.8.0-cdh6.1.0 |
| | org.apache.kudu | kudu-flume-sink | 1.8.0-cdh6.1.0 |
| | org.apache.kudu | kudu-mapreduce | 1.8.0-cdh6.1.0 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.8.0-cdh6.1.0 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.8.0-cdh6.1.0 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.0.0-cdh6.1.0 |

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| | org.apache.oozie | oozie-core | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-examples | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-server | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-sharelib-hive | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-sharelib-pig | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-sharelib-spark | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.0.0-cdh6.1.0 |
| | org.apache.oozie | oozie-tools | 5.0.0-cdh6.1.0 |
| | org.apache.oozie.test | oozie-mini | 5.0.0-cdh6.1.0 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.1.0 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.1.0 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.1.0 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.1.0 |
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.1.0 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.1.0 |
| | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.1.0 |

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| Apache Sentry | org.apache.sentry | sentry-binding-hbase-indexer | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-binding-hive | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-binding-hive-common | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-binding-hive-follower | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-binding-kafka | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-binding-solr | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-core-common | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-core-model-db | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-core-model-indexer | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-core-model-kafka | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-core-model-solr | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-dist | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-hdfs-common | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-hdfs-dist | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-hdfs-service | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-policy-common | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-policy-engine | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-provider-cache | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-provider-common | 2.1.0-cdh6.1.0 |

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| | org.apache.sentry | sentry-provider-db | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-provider-file | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-service-api | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-service-client | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-service-server | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-shaded | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-spi | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-tests-hive | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-tests-kafka | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-tests-solr | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | sentry-tools | 2.1.0-cdh6.1.0 |
| | org.apache.sentry | solr-sentry-handlers | 2.1.0-cdh6.1.0 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-analyzers-icu | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-analyzers-morfologik | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-analyzers-nori | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-analyzers-openssl | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.4.0-cdh6.1.0 |

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| | org.apache.lucene | lucene-analyzers-stempel | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-analyzers-uima | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-backward-codecs | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-benchmark | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-classification | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-codecs | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-core | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-demo | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-expressions | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-facet | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-grouping | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-highlighter | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-join | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-memory | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-misc | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-queries | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-queryparser | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-replicator | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-sandbox | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-spatial | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-spatial-extras | 7.4.0-cdh6.1.0 |

| Project | groupId | artifactId | version |
|--------------|-------------------|-------------------------------|----------------|
| | org.apache.lucene | lucene-spatial3d | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-suggest | 7.4.0-cdh6.1.0 |
| | org.apache.lucene | lucene-test-framework | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-analysis-extras | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-analytics | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-cell | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-clustering | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-core | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-dataimporthandler | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-jetty-customizations | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-langid | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-ltr | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-prometheus-exporter | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-security-util | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-sentry-audit-logging | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-solrj | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-test-framework | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-uima | 7.4.0-cdh6.1.0 |
| | org.apache.solr | solr-velocity | 7.4.0-cdh6.1.0 |
| Apache Spark | org.apache.spark | spark-avro_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-catalyst_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-core_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-graphx_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-hive_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-kvstore_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-launcher_2.11 | 2.4.0-cdh6.1.0 |

| Project | groupId | artifactId | version |
|------------------|----------------------|--|----------------|
| | org.apache.spark | spark-mllib-local_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-mllib_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-network-common_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-repl_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-sketch_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-sql_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-streaming_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-tags_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-unsafe_2.11 | 2.4.0-cdh6.1.0 |
| | org.apache.spark | spark-yarn_2.11 | 2.4.0-cdh6.1.0 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.1.0 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.1.0 |

Maven Artifacts for CDH 6.0.x Releases

CDH 6.0.1

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|---------------|-------------------|---------------------------------|----------------|
| Apache Hadoop | org.apache.hadoop | hadoop-aliyun | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-annotations | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-archive-logs | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-archives | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-assemblies | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-auth | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-aws | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-azure | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-azure-datalake | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------------------|----------------|
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-hdfs-httpfs | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|-------------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.0.1 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.0.1 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-ant | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-cli | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-hplsql | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.0.1 |

| Project | groupId | artifactId | version |
|--------------|--------------------------|---------------------------------|----------------|
| | org.apache.hive | hive-serde | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.0.1 |
| | org.apache.hive | hive-testutils | 2.1.1-cdh6.0.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.0.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.0.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.0.1 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.0.1 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.0.1 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.0.1 |
| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.0.1 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.0.1 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.0.1 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-checkstyle | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-client | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-client-project | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-common | 2.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|---------|------------------|--------------------------------|----------------|
| | org.apache.hbase | hbase-endpoint | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-error-prone | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-examples | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-external-blockcache | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-hadoop-compat | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-http | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-it | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-mapreduce | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-metrics | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-metrics-api | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-procedure | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-protocol | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-protocol-shaded | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-replication | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-resource-bundle | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-rest | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-rsgroup | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-server | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-shaded-client | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|------------------|----------------------|-----------------------------|-----------------|
| | org.apache.hbase | hbase-shaded-client-project | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-shell | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-spark | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-spark-it | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-testing-util | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-thrift | 2.0.0-cdh6.0.1 |
| | org.apache.hbase | hbase-zookeeper | 2.0.0-cdh6.0.1 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.0.1 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.0.1 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.0.1 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.0.1 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.0.1 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.0.1 |
| Apache Flume 1.x | org.apache.flume | flume-checkstyle | 1.8.0-cdh6.0.1 |
| | org.apache.flume | flume-ng-auth | 1.8.0-cdh6.0.1 |
| | org.apache.flume | flume-ng-configuration | 1.8.0-cdh6.0.1 |
| | org.apache.flume | flume-ng-core | 1.8.0-cdh6.0.1 |
| | org.apache.flume | flume-ng-embedded-agent | 1.8.0-cdh6.0.1 |
| | org.apache.flume | flume-ng-node | 1.8.0-cdh6.0.1 |
| | org.apache.flume | flume-ng-sdk | 1.8.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|---------|------------------------------------|--------------------------------|----------------|
| | org.apache.flume | flume-ng-tests | 1.8.0-cdh6.0.1 |
| | org.apache.flume | flume-tools | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-channels | flume-file-channel | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-channels | flume-jdbc-channel | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-channels | flume-kafka-channel | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-channels | flume-spillable-memory-channel | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-clients | flume-ng-log4jappender | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sources | flume-avro-source | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sources | flume-thrift-source | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sinks | flume-dataset-sink | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sinks | flume-hdfs-sink | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sinks | flume-hive-sink | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sinks | flume-http-sink | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sinks | flume-irc-sink | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sinks | flume-ng-hbase2-sink | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sinks | flume-ng-kafka-sink | 1.8.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|---------|-----------------------------------|------------------------------|----------------|
| | org.apache.flume.flume-ng-sinks | flume-ng-morphline-solr-sink | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sources | flume-jms-source | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sources | flume-kafka-source | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sources | flume-scribe-source | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sources | flume-taildir-source | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-ng-sources | flume-twitter-source | 1.8.0-cdh6.0.1 |
| | org.apache.flume.flume-shared | flume-shared-kafka-test | 1.8.0-cdh6.0.1 |
| Kafka | org.apache.kafka | connect-api | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | connect-file | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | connect-json | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | connect-runtime | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | connect-transforms | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | kafka-clients | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | kafka-examples | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | kafka-log4j-appender | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | kafka-streams | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | kafka-streams-examples | 1.0.1-cdh6.0.1 |
| | org.apache.kafka | kafka-tools | 1.0.1-cdh6.0.1 |

| Project | groupId | artifactId | version |
|---------------|-----------------------|------------------------------|----------------|
| | org.apache.kafka | kafka_2.11 | 1.0.1-cdh6.0.1 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-core | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-examples | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-server | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-sharelib-hive | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-sharelib-pig | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-sharelib-spark | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.0.0-cdh6.0.1 |
| | org.apache.oozie | oozie-tools | 5.0.0-cdh6.0.1 |
| | org.apache.oozie.test | oozie-mini | 5.0.0-cdh6.0.1 |
| | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.0.1 |
| Apache Sentry | org.apache.sentry | sentry-binding-hbase-indexer | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-binding-hive | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-binding-hive-common | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------------|----------------|
| | org.apache.sentry | sentry-binding-hive-follower | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-binding-kafka | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-binding-solr | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-core-common | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-core-model-db | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-core-model-indexer | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-core-model-kafka | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-core-model-solr | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-dist | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-hdfs-common | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-hdfs-dist | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-hdfs-service | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-policy-common | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-policy-engine | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-provider-cache | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-provider-common | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-provider-db | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-provider-file | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-tests-hive | 2.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|--------------|-------------------|-------------------------------------|----------------|
| | org.apache.sentry | sentry-tests-kafka | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-tests-solr | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | sentry-tools | 2.0.0-cdh6.0.1 |
| | org.apache.sentry | solr-sentry-handlers | 2.0.0-cdh6.0.1 |
| Apache Spark | org.apache.spark | spark-catalyst_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-core_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-graphx_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-hive_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-launcher_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-mllib_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-network-common_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-repl_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-sketch_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-sql_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.2.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|---------------|-------------------|--|-----------------|
| | org.apache.spark | spark-streaming-flume_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-streaming_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-tags_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-unsafe_2.11 | 2.2.0-cdh6.0.1 |
| | org.apache.spark | spark-yarn_2.11 | 2.2.0-cdh6.0.1 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.0.1 |
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.0.1 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.0.1 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.0.1 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.0.1 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.0.1 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.0.1 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.0.1 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.0.1 |
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.0.1 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.0.1 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.0.1 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.0.1 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.0.1 |

| Project | groupId | artifactId | version |
|----------|-----------------|-------------------------------------|----------------|
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.0.1 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.0.1 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.0.1 |
| | org.apache.avro | avro-thrift | 1.8.2-cdh6.0.1 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.0.1 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.0.1 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.0.1 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|-------------|-------------------|---------------------------------|----------------|
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.0.1 |
| | org.kitesdk | kite-tools | 1.0.0-cdh6.0.1 |
| Apache Solr | org.apache.lucene | lucene-analyzers-common | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-analyzers-icu | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-analyzers-kuromoji | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-analyzers-morfologik | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-analyzers-phonetic | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-analyzers-smartcn | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-analyzers-stempel | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-analyzers-uima | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-backward-codecs | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-benchmark | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-classification | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-codecs | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-core | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-demo | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-expressions | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-facet | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-grouping | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-highlighter | 7.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|---------|-------------------|-------------------------------|----------------|
| | org.apache.lucene | lucene-join | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-memory | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-misc | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-queries | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-queryparser | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-replicator | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-sandbox | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-spatial | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-spatial-extras | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-spatial3d | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-suggest | 7.0.0-cdh6.0.1 |
| | org.apache.lucene | lucene-test-framework | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-analysis-extras | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-analytics | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-cell | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-clustering | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-core | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-dataimporthandler | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-jetty-customizations | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-langid | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-ltr | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-security-util | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-sentry-audit-logging | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-solrj | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-test-framework | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-uima | 7.0.0-cdh6.0.1 |
| | org.apache.solr | solr-velocity | 7.0.0-cdh6.0.1 |

| Project | groupId | artifactId | version |
|-----------------|---------------------|--------------------------|----------------|
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.0.1 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.0.1 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.0.1 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.0.1 |
| Apache Kudu | org.apache.kudu | kudu-client | 1.6.0-cdh6.0.1 |
| | org.apache.kudu | kudu-client-tools | 1.6.0-cdh6.0.1 |
| | org.apache.kudu | kudu-flume-sink | 1.6.0-cdh6.0.1 |
| | org.apache.kudu | kudu-mapreduce | 1.6.0-cdh6.0.1 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.6.0-cdh6.0.1 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.6.0-cdh6.0.1 |

CDH 6.0.0

The following table lists the project name, groupId, artifactId, and version required to access each CDH artifact.

| Project | groupId | artifactId | version |
|---------------|-------------------|---------------------|----------------|
| Apache Hadoop | org.apache.hadoop | hadoop-aliyun | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-annotations | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-archive-logs | 3.0.0-cdh6.0.0 |

| Project | groupId | artifactId | version |
|---------|-------------------|---------------------------------|----------------|
| | org.apache.hadoop | hadoop-archives | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-assemblies | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-auth | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-aws | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-azure | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-azure-datalake | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-build-tools | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-client | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-client-api | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-client-integration-tests | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-client-minicluster | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-client-runtime | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-cloud-storage | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-common | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-datajoin | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-distcp | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-extras | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-gridmix | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-hdfs | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-hdfs-client | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-hdfs-httpfs | 3.0.0-cdh6.0.0 |

| Project | groupId | artifactId | version |
|---------|-------------------|------------------------------------|----------------|
| | org.apache.hadoop | hadoop-hdfs-native-client | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-hdfs-nfs | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-kafka | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-kms | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-app | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-common | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-core | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-hs-plugins | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-jobclient | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-nativetask | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-shuffle | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-client-uploader | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-mapreduce-examples | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-maven-plugins | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-minicluster | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-minikdc | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-nfs | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-openstack | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-resourceestimator | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-rumen | 3.0.0-cdh6.0.0 |

| Project | groupId | artifactId | version |
|-------------|-------------------|--|----------------|
| | org.apache.hadoop | hadoop-sls | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-streaming | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-api | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-applications-distributedshell | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-applications-unmanaged-am-launcher | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-client | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-common | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-registry | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-applicationhistoryservice | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-common | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-nodemanager | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-resourcemanager | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-router | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-sharedcachemanager | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-tests | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-timeline-pluginstorage | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-timelineservice-hbase-tests | 3.0.0-cdh6.0.0 |
| | org.apache.hadoop | hadoop-yarn-server-web-proxy | 3.0.0-cdh6.0.0 |
| Apache Hive | org.apache.hive | hive-accumulo-handler | 2.1.1-cdh6.0.0 |

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| | org.apache.hive | hive-ant | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-beeline | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-classification | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-cli | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-common | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-contrib | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-exec | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-hbase-handler | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-hplsql | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-jdbc | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-llap-client | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-llap-common | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-llap-ext-client | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-llap-server | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-llap-tez | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-metastore | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-orc | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-serde | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-service | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-service-rpc | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-shims | 2.1.1-cdh6.0.0 |

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| | org.apache.hive | hive-spark-client | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-storage-api | 2.1.1-cdh6.0.0 |
| | org.apache.hive | hive-testutils | 2.1.1-cdh6.0.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-core | 2.1.1-cdh6.0.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-pig-adapter | 2.1.1-cdh6.0.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-server-extensions | 2.1.1-cdh6.0.0 |
| | org.apache.hive.hcatalog | hive-hcatalog-streaming | 2.1.1-cdh6.0.0 |
| | org.apache.hive.hcatalog | hive-webhcat | 2.1.1-cdh6.0.0 |
| | org.apache.hive.hcatalog | hive-webhcat-java-client | 2.1.1-cdh6.0.0 |
| | org.apache.hive.shims | hive-shims-0.23 | 2.1.1-cdh6.0.0 |
| | org.apache.hive.shims | hive-shims-common | 2.1.1-cdh6.0.0 |
| | org.apache.hive.shims | hive-shims-scheduler | 2.1.1-cdh6.0.0 |
| Apache HBase | org.apache.hbase | hbase-annotations | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-checkstyle | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-client | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-client-project | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-common | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-endpoint | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-error-prone | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-examples | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-external-blockcache | 2.0.0-cdh6.0.0 |

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| | org.apache.hbase | hbase-hadoop-compat | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-hadoop2-compat | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-http | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-it | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-mapreduce | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-metrics | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-metrics-api | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-procedure | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-protocol | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-protocol-shaded | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-replication | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-resource-bundle | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-rest | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-rsgroup | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-server | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-shaded-client | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-shaded-client-byo-hadoop | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-shaded-client-project | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-shaded-mapreduce | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-shell | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-spark | 2.0.0-cdh6.0.0 |

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| | org.apache.hbase | hbase-spark-it | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-testing-util | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-thrift | 2.0.0-cdh6.0.0 |
| | org.apache.hbase | hbase-zookeeper | 2.0.0-cdh6.0.0 |
| Apache ZooKeeper | org.apache.zookeeper | zookeeper | 3.4.5-cdh6.0.0 |
| Apache Sqoop | org.apache.sqoop | sqoop | 1.4.7-cdh6.0.0 |
| Apache Pig | org.apache.pig | pig | 0.17.0-cdh6.0.0 |
| | org.apache.pig | piggybank | 0.17.0-cdh6.0.0 |
| | org.apache.pig | pigsmoke | 0.17.0-cdh6.0.0 |
| | org.apache.pig | pigunit | 0.17.0-cdh6.0.0 |
| Apache Flume 1.x | org.apache.flume | flume-checkstyle | 1.8.0-cdh6.0.0 |
| | org.apache.flume | flume-ng-auth | 1.8.0-cdh6.0.0 |
| | org.apache.flume | flume-ng-configuration | 1.8.0-cdh6.0.0 |
| | org.apache.flume | flume-ng-core | 1.8.0-cdh6.0.0 |
| | org.apache.flume | flume-ng-embedded-agent | 1.8.0-cdh6.0.0 |
| | org.apache.flume | flume-ng-node | 1.8.0-cdh6.0.0 |
| | org.apache.flume | flume-ng-sdk | 1.8.0-cdh6.0.0 |
| | org.apache.flume | flume-ng-tests | 1.8.0-cdh6.0.0 |
| | org.apache.flume | flume-tools | 1.8.0-cdh6.0.0 |
| | org.apache.flume.flume-ng-channels | flume-file-channel | 1.8.0-cdh6.0.0 |

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| | org.apache. flume. flume-ng-channels | flume-jdbc-channel | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-channels | flume-kafka-channel | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-channels | flume-spillable-memory-channel | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-clients | flume-ng-log4jappender | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sources | flume-avro-source | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sources | flume-thrift-source | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sinks | flume-dataset-sink | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sinks | flume-hdfs-sink | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sinks | flume-hive-sink | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sinks | flume-http-sink | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sinks | flume-irc-sink | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-hbase2-sink | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-kafka-sink | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sinks | flume-ng-morphline-solr-sink | 1.8.0-cdh6.0.0 |
| | org.apache. flume. flume-ng-sources | flume-jms-source | 1.8.0-cdh6.0.0 |

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| | org.apache.flume.flume-ng-sources | flume-kafka-source | 1.8.0-cdh6.0.0 |
| | org.apache.flume.flume-ng-sources | flume-scribe-source | 1.8.0-cdh6.0.0 |
| | org.apache.flume.flume-ng-sources | flume-taildir-source | 1.8.0-cdh6.0.0 |
| | org.apache.flume.flume-ng-sources | flume-twitter-source | 1.8.0-cdh6.0.0 |
| | org.apache.flume.flume-shared | flume-shared-kafka-test | 1.8.0-cdh6.0.0 |
| Kafka | org.apache.kafka | connect-api | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | connect-file | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | connect-json | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | connect-runtime | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | connect-transforms | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | kafka-clients | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | kafka-examples | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | kafka-log4j-appender | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | kafka-streams | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | kafka-streams-examples | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | kafka-tools | 1.0.1-cdh6.0.0 |
| | org.apache.kafka | kafka_2.11 | 1.0.1-cdh6.0.0 |
| Apache Oozie | org.apache.oozie | oozie-client | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-core | 5.0.0-cdh6.0.0 |

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| | org.apache.oozie | oozie-examples | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-server | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-sharelib-distcp | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-sharelib-hcatalog | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-sharelib-hive | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-sharelib-hive2 | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-sharelib-oozie | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-sharelib-pig | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-sharelib-spark | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-sharelib-sqoop | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-sharelib-streaming | 5.0.0-cdh6.0.0 |
| | org.apache.oozie | oozie-tools | 5.0.0-cdh6.0.0 |
| | org.apache.oozie.test | oozie-mini | 5.0.0-cdh6.0.0 |
| | com.cloudera.cdh | solr-upgrade | 1.0.0-cdh6.0.0 |
| Apache Sentry | org.apache.sentry | sentry-binding-hbase-indexer | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-binding-hive | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-binding-hive-common | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-binding-hive-conf | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-binding-hive-follower | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-binding-kafka | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-binding-solr | 2.0.0-cdh6.0.0 |

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| | org.apache.sentry | sentry-core-common | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-core-model-db | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-core-model-indexer | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-core-model-kafka | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-core-model-solr | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-dist | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-hdfs-common | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-hdfs-dist | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-hdfs-namenode-plugin | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-hdfs-service | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-policy-common | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-policy-engine | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-provider-cache | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-provider-common | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-provider-db | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-provider-file | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-shaded-miscellaneous | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-tests-hive | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-tests-kafka | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-tests-solr | 2.0.0-cdh6.0.0 |
| | org.apache.sentry | sentry-tools | 2.0.0-cdh6.0.0 |

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| | org.apache.sentry | solr-sentry-handlers | 2.0.0-cdh6.0.0 |
| Apache Spark | org.apache.spark | spark-catalyst_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-core_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-graphx_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-hadoop-cloud_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-hive_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-launcher_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-mllib-local_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-mllib_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-network-common_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-network-shuffle_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-network-yarn_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-repl_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-sketch_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-sql-kafka-0-10_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-sql_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-streaming-flume-assembly_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-streaming-flume-sink_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-streaming-flume_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-streaming-kafka-0-10-assembly_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-streaming-kafka-0-10_2.11 | 2.2.0-cdh6.0.0 |

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| | org.apache.spark | spark-streaming_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-tags_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-unsafe_2.11 | 2.2.0-cdh6.0.0 |
| | org.apache.spark | spark-yarn_2.11 | 2.2.0-cdh6.0.0 |
| Apache Crunch | org.apache.crunch | crunch-archetype | 0.11.0-cdh6.0.0 |
| | org.apache.crunch | crunch-contrib | 0.11.0-cdh6.0.0 |
| | org.apache.crunch | crunch-core | 0.11.0-cdh6.0.0 |
| | org.apache.crunch | crunch-examples | 0.11.0-cdh6.0.0 |
| | org.apache.crunch | crunch-hbase | 0.11.0-cdh6.0.0 |
| | org.apache.crunch | crunch-hive | 0.11.0-cdh6.0.0 |
| | org.apache.crunch | crunch-scrunch | 0.11.0-cdh6.0.0 |
| | org.apache.crunch | crunch-spark | 0.11.0-cdh6.0.0 |
| | org.apache.crunch | crunch-test | 0.11.0-cdh6.0.0 |
| Apache Avro | org.apache.avro | avro | 1.8.2-cdh6.0.0 |
| | org.apache.avro | avro-compiler | 1.8.2-cdh6.0.0 |
| | org.apache.avro | avro-guava-dependencies | 1.8.2-cdh6.0.0 |
| | org.apache.avro | avro-ipc | 1.8.2-cdh6.0.0 |
| | org.apache.avro | avro-mapred | 1.8.2-cdh6.0.0 |
| | org.apache.avro | avro-maven-plugin | 1.8.2-cdh6.0.0 |
| | org.apache.avro | avro-protobuf | 1.8.2-cdh6.0.0 |
| | org.apache.avro | avro-service-archetype | 1.8.2-cdh6.0.0 |

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| | org.apache.avro | avro-thrift | 1.8.2-cdh6.0.0 |
| | org.apache.avro | avro-tools | 1.8.2-cdh6.0.0 |
| | org.apache.avro | trevni-avro | 1.8.2-cdh6.0.0 |
| | org.apache.avro | trevni-core | 1.8.2-cdh6.0.0 |
| Kite SDK | org.kitesdk | kite-data-core | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-data-crunch | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-data-hbase | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-data-hive | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-data-mapreduce | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-data-oozie | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-data-s3 | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-data-spark | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-hadoop-compatibility | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-maven-plugin | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-minicluster | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-avro | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-core | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-hadoop-core | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-hadoop-parquet-avro | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-hadoop-rcfile | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-hadoop-sequencefile | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-json | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-maxmind | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-metrics-scalable | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-metrics-servlets | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-protobuf | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-saxon | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-solr-cell | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-solr-core | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-tika-core | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-tika-decompress | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-twitter | 1.0.0-cdh6.0.0 |
| | org.kitesdk | kite-morphlines-useragent | 1.0.0-cdh6.0.0 |

| Project | groupId | artifactId | version |
|-------------|-----------------------|-----------------------------|----------------|
| | org.kitesdk | kite-tools | 1.0.0-cdh6.0.0 |
| Apache Solr | org.apache. lucene | lucene-analyzers-common | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-analyzers-icu | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-analyzers-kuromoji | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-analyzers-morfologik | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-analyzers-phonetic | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-analyzers-smartcn | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-analyzers-stempel | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-analyzers-uima | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-backward-codecs | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-benchmark | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-classification | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-codecs | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-core | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-demo | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-expressions | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-facet | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-grouping | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-highlighter | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-join | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-memory | 7.0.0-cdh6.0.0 |
| | org.apache. lucene | lucene-misc | 7.0.0-cdh6.0.0 |

| Project | groupId | artifactId | version |
|-----------------|---------------------|-------------------------------|----------------|
| | org.apache.lucene | lucene-queries | 7.0.0-cdh6.0.0 |
| | org.apache.lucene | lucene-queryparser | 7.0.0-cdh6.0.0 |
| | org.apache.lucene | lucene-replicator | 7.0.0-cdh6.0.0 |
| | org.apache.lucene | lucene-sandbox | 7.0.0-cdh6.0.0 |
| | org.apache.lucene | lucene-spatial | 7.0.0-cdh6.0.0 |
| | org.apache.lucene | lucene-spatial-extras | 7.0.0-cdh6.0.0 |
| | org.apache.lucene | lucene-spatial3d | 7.0.0-cdh6.0.0 |
| | org.apache.lucene | lucene-suggest | 7.0.0-cdh6.0.0 |
| | org.apache.lucene | lucene-test-framework | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-analysis-extras | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-analytics | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-cell | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-clustering | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-core | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-dataimporthandler | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-dataimporthandler-extras | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-jetty-customizations | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-langid | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-ltr | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-security-util | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-sentry-audit-logging | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-solrj | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-test-framework | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-uima | 7.0.0-cdh6.0.0 |
| | org.apache.solr | solr-velocity | 7.0.0-cdh6.0.0 |
| Cloudera Search | com.cloudera.search | search-crunch | 1.0.0-cdh6.0.0 |
| | com.cloudera.search | search-mr | 1.0.0-cdh6.0.0 |
| HBase Indexer | com.ngdata | hbase-indexer-all | 1.5-cdh6.0.0 |

| Project | groupId | artifactId | version |
|-------------|-----------------|--------------------------|----------------|
| | com.ngdata | hbase-indexer-cli | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-indexer-common | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-indexer-demo | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-indexer-dist | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-indexer-engine | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-indexer-model | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-indexer-morphlines | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-indexer-mr | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-indexer-server | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-sep-api | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-sep-demo | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-sep-impl | 1.5-cdh6.0.0 |
| | com.ngdata | hbase-sep-tools | 1.5-cdh6.0.0 |
| Apache Kudu | org.apache.kudu | kudu-client | 1.6.0-cdh6.0.0 |
| | org.apache.kudu | kudu-client-tools | 1.6.0-cdh6.0.0 |
| | org.apache.kudu | kudu-flume-sink | 1.6.0-cdh6.0.0 |
| | org.apache.kudu | kudu-mapreduce | 1.6.0-cdh6.0.0 |
| | org.apache.kudu | kudu-spark2-tools_2.11 | 1.6.0-cdh6.0.0 |
| | org.apache.kudu | kudu-spark2_2.11 | 1.6.0-cdh6.0.0 |

Cloudera Navigator 6 Encryption Version and Download Information

The 64-bit packages listed here support both Cloudera Express with its extensive set of monitoring and management features, and Cloudera Enterprise with additional functionality. A 60-day trial can be enabled to provide access to the full set of Cloudera Enterprise Cloudera Enterprise features. Cloudera Enterprise can be enabled permanently with the appropriate license. To obtain a Cloudera Enterprise license, fill in this [form](#) or call 866-843-7207.

Cloudera Navigator Key Trustee Server Version and Download Information

You can install Key Trustee Server using parcels in Cloudera Manager or using packages.

For more information on parcels, see [Parcels](#).

Navigator Key Trustee Server 6.1.0

- Parcel repository tarball:
 - Go to the Cloudera Navigator Key Trustee Server [download page](#) and select **Parcels** from the **Package or Parcel** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Installing Cloudera Navigator Key Trustee Server](#).

- Package repository tarball:
 - Go to the Cloudera Navigator Key Trustee Server [download page](#) and select **Packages** from the **Package or Parcel** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Package installation command:

```
yum install keytrustee-server-6.1.0
```

- Set up an internal repository, following the instructions in [Installing Cloudera Navigator Key Trustee Server](#).

- Release Notes:
[Cloudera Navigator 6.1.0 Encryption Release Notes](#) on page 1440

Navigator Key Trustee Server 6.0.0

- Parcel repository tarball:
 - Go to the Cloudera Navigator Key Trustee Server [download page](#) and select **Parcels** from the **Package or Parcel** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Installing Cloudera Navigator Key Trustee Server](#).
- Package repository tarball:
 - Go to the Cloudera Navigator Key Trustee Server [download page](#) and select **Packages** from the **Package or Parcel** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Package installation command:

```
yum install keytrustee-server-6.0.0
```

- Set up an internal repository, following the instructions in [Installing Cloudera Navigator Key Trustee Server](#).

- Release Notes:
[Cloudera Navigator 6.0.0 Encryption Release Notes](#) on page 1450

Cloudera Navigator Key HSM Version and Download Information

Cloudera Navigator Key HSM 6.1.0

RHEL or CentOS

- Package repository tarball:
 - Visit the Cloudera Navigator Key HSM [download page](#). Select your OS version, and click **DOWNLOAD NOW**.
- Package installation command:

```
yum install keytrustee-keyhsm-6.1.0
```

- Release notes:
[Cloudera Navigator 6.1.0 Encryption Release Notes](#) on page 1440

Cloudera Navigator Key HSM 6.0.0

RHEL or CentOS

- Package repository tarball:
 - Visit the Cloudera Navigator Key HSM [download page](#). Select your OS version, and click **DOWNLOAD NOW**.

- Package installation command:

```
yum install keytrustee-keyhsm-6.0.0
```

- Release notes:

[Cloudera Navigator 6.0.0 Encryption Release Notes](#) on page 1450

Cloudera Navigator Key Trustee KMS Version and Download Information

You can install Key Trustee KMS using parcels in Cloudera Manager or using packages.

For more information on parcels, see [Parcels](#).

Key Trustee KMS 6.2.0

- Parcel repository tarball:
 - Visit the Key Trustee KMS [download page](#).
 - Select **Parcels** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Remote Parcel Repository for Cloudera Manager](#).
- Package repository tarball:
 - Visit the Key Trustee KMS [download page](#).
 - Select **Packages** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Select your operating system from the **SELECT AN OS** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Package Repository for Cloudera Manager](#).
- Installation instructions:
 - [Installing Key Trustee KMS](#)
- Release notes:

[Cloudera Navigator 6.2.0 Encryption Release Notes](#) on page 1433

Key Trustee KMS 6.1.0

- Parcel repository tarball:
 - Visit the Key Trustee KMS [download page](#).
 - Select **Parcels** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Remote Parcel Repository for Cloudera Manager](#).
- Package repository tarball:
 - Visit the Key Trustee KMS [download page](#).
 - Select **Packages** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Select your operating system from the **SELECT AN OS** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Package Repository for Cloudera Manager](#).
- Installation instructions:

- [Installing Key Trustee KMS](#)
- Release notes:
[Cloudera Navigator 6.1.0 Encryption Release Notes](#) on page 1440

Key Trustee KMS 6.0.0

- Parcel repository tarball:
 - Visit the Key Trustee KMS [download page](#).
 - Select **Parcels** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Remote Parcel Repository for Cloudera Manager](#).
- Package repository tarball:
 - Visit the Key Trustee KMS [download page](#).
 - Select **Packages** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Select your operating system from the **SELECT AN OS** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Package Repository for Cloudera Manager](#).
- Installation instructions:
 - [Installing Key Trustee KMS](#)
- Release notes:
[Cloudera Navigator 6.0.0 Encryption Release Notes](#) on page 1450

Cloudera Navigator HSM KMS Version and Download Information

You can install HSM KMS using parcels in Cloudera Manager or using packages.

For more information on parcels, see [Parcels](#).

Cloudera Navigator HSM KMS 6.2.0

- Parcel repository tarball:
 - Visit the HSM KMS [download page](#).
 - Select **Parcels** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Remote Parcel Repository for Cloudera Manager](#).
- Package repository tarball:
 - Visit the HSM KMS [download page](#).
 - Select **Packages** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Select your operating system from the **SELECT AN OS** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Package Repository for Cloudera Manager](#).
- Installation instructions:
 - [Installing Navigator HSM KMS Backed by Thales HSM](#)
 - [Installing Navigator HSM KMS Backed by Luna HSM](#)

- Release notes:

[Cloudera Navigator 6.2.0 Encryption Release Notes](#) on page 1433

Cloudera Navigator HSM KMS 6.1.0

- Parcel repository tarball:
 - Visit the HSM KMS [download page](#).
 - Select **Parcels** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Remote Parcel Repository for Cloudera Manager](#).
- Package repository tarball:
 - Visit the HSM KMS [download page](#).
 - Select **Packages** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Select your operating system from the **SELECT AN OS** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Package Repository for Cloudera Manager](#).
- Installation instructions:
 - [Installing Navigator HSM KMS Backed by Thales HSM](#)
 - [Installing Navigator HSM KMS Backed by Luna HSM](#)
- Release notes:

[Cloudera Navigator 6.1.0 Encryption Release Notes](#) on page 1440

Cloudera Navigator HSM KMS 6.0.0

- Parcel repository tarball:
 - Visit the HSM KMS [download page](#).
 - Select **Parcels** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Remote Parcel Repository for Cloudera Manager](#).
- Package repository tarball:
 - Visit the HSM KMS [download page](#).
 - Select **Packages** from the **CHOOSE DOWNLOAD TYPE** drop-down menu.
 - Select your operating system from the **SELECT AN OS** drop-down menu.
 - Click **DOWNLOAD NOW**.
 - Set up an internal repository, following the instructions in [Creating and Using a Package Repository for Cloudera Manager](#).
- Installation instructions:
 - [Installing Navigator HSM KMS Backed by Thales HSM](#)
 - [Installing Navigator HSM KMS Backed by Luna HSM](#)
- Release notes:

[Cloudera Navigator 6.0.0 Encryption Release Notes](#) on page 1450

Cloudera Navigator Encrypt Version and Download Information

Navigator Encrypt 6.2.0

Release notes: [Cloudera Navigator 6.2.0 Encryption Release Notes](#) on page 1433.

Package repository tarball: Visit the Cloudera Navigator Encrypt [download page](#). Select your OS version, and then click **DOWNLOAD NOW**.

For instructions on setting up the repository and installing Navigator Encrypt, see [Installing Cloudera Navigator Encrypt](#).

Navigator Encrypt 6.1.0

Release notes: [Cloudera Navigator 6.1.0 Encryption Release Notes](#) on page 1440.

Package repository tarball: Visit the Cloudera Navigator Encrypt [download page](#). Select your OS version, and then click **DOWNLOAD NOW**.

For instructions on setting up the repository and installing Navigator Encrypt, see [Installing Cloudera Navigator Encrypt](#).

Navigator Encrypt 6.0.0

Release notes: [Cloudera Navigator 6.0.0 Encryption Release Notes](#) on page 1450

Package repository tarball: Visit the Cloudera Navigator Encrypt [download page](#). Select your OS version, and then click **DOWNLOAD NOW**.

For instructions on setting up the repository and installing Navigator Encrypt, see [Installing Cloudera Navigator Encrypt](#).

Updating an existing CDH/Cloudera Manager deployment to access downloads with authentication

Access to Cloudera Manager binaries for production purposes requires authentication. To access the binaries at the locations below, you must first have an active subscription agreement and obtain a license key file along with the required authentication credentials (username and password).

If your deployment was not installed using authenticated downloads and if you need to add hosts to an existing cluster or add a new cluster, you must follow the steps in this topic to configure your deployment to access the downloads.

Note that as of February 1, 2021, the download URLs on `archive.cloudera.com` have changed. They are the same as the previous URLs, except that `/p` is added to the URL, after `archive.cloudera.com`. Depending on where you use the URL, you may also need to prepend your credentials to the URL. The instructions below contain that information. For example:

```
https://username:password@archive.cloudera.com/p/...
```

For a complete list of download URLs, see:

- [Cloudera Manager 6.x Version and Download Information](#)
- [CDH 6.x Download Information](#)

Add hosts to an existing cluster

See

- [Add hosts managed by Cloudera Manager using parcels](#) on page 286, below.
- [Add hosts managed by Cloudera Manager using packages](#) on page 287, below.

Add a new cluster

If you are adding a CDH cluster that is the same version of CDH as another cluster managed by the same instance of Cloudera Manager, no further action is required. To add a new cluster with a different supported version of CDH, see

- [Adding a Cluster to an existing Cloudera Manager deployment using Parcels](#) on page 287, below.
- [Adding a Cluster to an existing Cloudera Manager deployment using Packages](#) on page 288, below.

New Installations

You must use the new URLs and include your username and password to access downloads for a new installation. See [Cloudera Installation Guide](#).

Upgrades

You must use the new URLs and include your username and password to access downloads for the upgrade. See the [Cloudera Enterprise Upgrade Guide](#).

If your deployment was installed or upgraded using authenticated downloads, no further action is needed.

Obtain Credentials

The license key file and authentication credentials are provided in an email sent to customer accounts from Cloudera when a new license is issued. If you have an existing license with a CDP Private Cloud Base Edition entitlement, you might not have received an email. In this instance you can identify the authentication credentials from the license key file. If you do not have access to the license key, contact your account representative to receive a copy.

The license key file and authentication credentials are provided in an email sent to customer accounts from Cloudera when a new license is issued. If you have an existing license with a Cloudera Enterprise entitlement, you might not have received an email. In this instance you can identify the authentication credentials from the license key file. If you do not have access to the license key, contact your account representative to receive a copy.

To identify your authentication credentials using your license key file, complete the following steps:

1. From cloudera.com, log into the cloudera.com account associated with the Cloudera Enterprise license and subscription agreement.
2. On the [Cloudera CDH Download](#) page, select the version that you want to install and click **Get It Now!**
3. Scroll down to the Credentials Generator at the bottom of the page.
4. In the Generate Credentials text box, copy and paste the text of the “PGP Signed Message” within your license key file and click **Get Credentials**. The credentials generator returns your username and password.



Note: Take note of the authentication credentials. You will need them during installation to complete tasks such as configuring a remote or local package repository.

When you obtain your authentication credentials, use them to form the URLs below, where you can access the Cloudera repositories in the Cloudera Archive.

Prepare your deployment

There are two options for access to the downloads:

- **Option A: Upgrade Cloudera Manager and configure the package manager**
 1. **Upgrade Cloudera Manager** to one of the versions listed below. (If you are using Cloudera Manager 6.3.3 or higher, you do not need to upgrade.) Cloudera Manager is compatible with any version of CDH that is equal to or lower than the Cloudera Manager version. The versions of Cloudera Manager shown below have been updated to use authenticated downloads:

Table 31: Cloudera Manager Upgrades for authenticated downloads

| Current Cloudera Manager version | Upgrade Cloudera Manager to this version |
|----------------------------------|--|
| 6.1.x | 6.1.1.4505 |
| 6.2.x | 6.2.1.4505 |
| 6.3.0-6.3.2 | 6.3.3 or 6.3.4 |



Note: You do not need to upgrade CDH.

To upgrade Cloudera Manager:

1. Go to the interactive [Cloudera Enterprise Upgrade guide page for upgrading Cloudera Manager](#).
 2. In the form at the top of the page, select the current version of your Cloudera Manager deployment.
 3. Select the appropriate new version of Cloudera Manager from the table above.
 4. Select the operating system, database, and Navigator status.
 5. Follow the remaining steps on the page to upgrade the Cloudera Manager server and agents.
- 2. Configure your operating system package manager** (yum, zypper, or apt-get) to access the public Cloudera repositories at `archive.cloudera.com`. See the following links:
- [Configure a Repository for Cloudera Manager 6.3](#)
 - [Configure a Repository for Cloudera Manager 6.2](#)
 - [Configure a Repository for Cloudera Manager 6.1](#)
 - [Configure a Repository for Cloudera Manager 6.0](#)
- **Option B: Use a local package and/or parcel repository.** If your cluster does not have access to the internet, this is the only option.
1. Download the contents of the repository for your version of the software from `archive.cloudera.com` using your username and password.
 2. Do one of the following:
 - Create a *local package repository* (for Cloudera Manager and CDH clusters installed using packages). See the following links:
 - [Configuring a Local package repository for Cloudera Manager/CDH 6.3](#)
 - [Configuring a Local package repository for Cloudera Manager/CDH 6.2](#)
 - [Configuring a Local package repository for Cloudera Manager/CDH 6.1](#)
 - [Configuring a Local package repository for Cloudera Manager/CDH 6.0](#)
 - Create *local parcel repository* (for CDH clusters installed using Parcels). See the following links:
 - [Configuring a Local parcel repository for Cloudera Manager/CDH 6.3](#)
 - [Configuring a Local parcel repository for Cloudera Manager/CDH 6.2](#)
 - [Configuring a Local parcel repository for Cloudera Manager/CDH 6.1](#)
 - [Configuring a Local parcel repository for Cloudera Manager/CDH 6.0](#)

Add hosts managed by Cloudera Manager using parcels

1. Follow the steps to *add hosts using the Add Host Wizard*. See the following links:
 - [Adding a Host to the cluster using Cloudera Manager 6.3](#)
 - [Adding a Host to the cluster using Cloudera Manager 6.2](#)
 - [Adding a Host to the cluster using Cloudera Manager 6.1](#)
 - [Adding a Host to the cluster using Cloudera Manager 6.0](#)
2. When you get to the **Select Repository** page, in the **Cloudera Manager Agent** section, select **Custom Repository** and enter one of the following:
 - If you have downloaded the repository and set up a local repository server, enter URL for the local repository.
 - If the cluster has access to the internet, enter the URL to the public Cloudera repository on `archive.cloudera.com`. See [Cloudera Manager Version and Download Information](#) to obtain the URL.

For example:

```
https://username:password@archive.cloudera.com/p/cm6/6.2.1.4505/redhat7/yum/
```

3. Continue with add cluster wizard to install the Cloudera Manager Agent, and, optionally the JDK.

Add hosts managed by Cloudera Manager using packages

1. Follow the steps to *add hosts using the Add Host Wizard*. See the following links:

- [Adding a Host to the cluster using Cloudera Manager 6.3](#)
- [Adding a Host to the cluster using Cloudera Manager 6.2](#)
- [Adding a Host to the cluster using Cloudera Manager 6.1](#)
- [Adding a Host to the cluster using Cloudera Manager 6.0](#)

2. When you get to the **Select Repository** page, in the **Cloudera Manager Agent** section, select **Custom Repository** and enter one of the following:

- If you have downloaded the repository and set up a local repository server, enter URL for the local repository.
- If the cluster has access to the internet, enter the URL to the public Cloudera repository on `archive.cloudera.com`. See [Cloudera Manager Version and Download Information](#) to obtain the URL.

For example:

```
https://username:password@archive.cloudera.com/p/cm6/6.2.1.4505/redhat7/yum/
```

3. In the **CDH and other software** section, select **Use Packages**.

The available versions of CDH display. Do not select any of these.

4. Select **Custom Repository**.

5. Enter the custom repository URL.

- If you have downloaded the package repository and have set up a local repository server, enter URL for the local repository.
- If the cluster has access to the internet, enter the URL to the public Cloudera package repository on `archive.cloudera.com`. See [CDH Download Information](#) to obtain the URL.

For example:

```
https://username:password@archive.cloudera.com/p/cdh6/6.2.1/redhat7/yum/
```

6. In the **Select the specific release of the Cloudera Manager Agent you want to install on your hosts.** section, click **Custom Repository**.

7. Enter the URL for the Cloudera Manager package repository. For example:

```
https://username:password@archive.cloudera.com/p/cm6/6.2.1.4505/redhat7/yum/
```

8. Continue with add cluster wizard to install the Cloudera Manager Agent, and, optionally the JDK.

Adding a Cluster to an existing Cloudera Manager deployment using Parcels



Note: You must first upgrade Cloudera Manager to one of the versions that [supports authenticated downloads](#), listed above, or set up a [local parcel repository](#).

1. Follow the steps to *add a cluster*. See the following links:

- [Adding a Host to the Cluster using Cloudera Manager 6.3](#)

- [Adding a Host to the Cluster using Cloudera Manager 6.2](#)
- [Adding a Host to the Cluster using Cloudera Manager 6.1](#)
- [Adding a Host to the Cluster using Cloudera Manager 6.0](#)

2. When you get to the **Select Repository** page, In the **Cloudera Manager Agent** section, select **Custom Repository**.
3. Enter the URL for the Cloudera Manager package repository. For example:

```
https://username:password@archive.cloudera.com/p/cm6/6.2.1.4505/redhat7/yum/
```

4. In the **CDH and other software** section, select **Use Parcels**.

The available versions of CDH display.

5. Select the version of CDH that you want to install. If you want to use a version of CDH that is not displayed:

- a. Click **Parcel Repositories & Network Settings**.

- b. In the **Remote Parcel Repository URLs** section, click the + icon do one of the following:

- If you have downloaded the parcel repository and have set up a local repository server, enter the URL for the local repository.
- If the cluster has access to the internet, enter the URL to the public repository on `archive.cloudera.com` See [CDH 6.x Download Information](#) to obtain the URL. For example:

```
https://username:password@archive.cloudera.com/p/archive.cloudera.com/p/cdh6/6.2.1/parcels/
```

The available versions of CDH display.

- c. Select the version of CDH you want to install.

6. Click **Continue** and follow the remaining steps in the add cluster wizard to install the Cloudera Manager Agent, and, optionally the JDK.

Adding a Cluster to an existing Cloudera Manager deployment using Packages

1. Follow the steps to *add a cluster*. See the following links:

- [Adding a Host to the Cluster using Cloudera Manager 6.3](#)
- [Adding a Host to the Cluster using Cloudera Manager 6.2](#)
- [Adding a Host to the Cluster using Cloudera Manager 6.1](#)
- [Adding a Host to the Cluster using Cloudera Manager 6.0](#)

2. When you get to the **Select Repository** page, In the **Cloudera Manager Agent** section, select **Custom Repository**.
3. Enter the URL for the Cloudera Manager package repository. For example:

```
https://username:password@archive.cloudera.com/p/cm6/6.2.1.4505/redhat7/yum/
```

4. In the **CDH and other software** section, select **Use Packages**.

The available versions of CDH display. Do not select any of these.

5. Select **Custom Repository**.

6. Enter the custom repository URL.

- If you have downloaded the package repository and have set up a local repository server, enter URL for the local repository.
- If the cluster has access to the internet, enter the URL to the public Cloudera package repository on `archive.cloudera.com`. See [CDH Download Information](#) to obtain the URL.

For example:

```
https://username:password@archive.cloudera.com/p/cdh6/6.2.1/redhat7/yum/
```

7. Continue with add cluster wizard to install the Cloudera Manager Agent, and, optionally the JDK.

Install and Upgrade Notes

The notes in this topic contain important information about installing and upgrading Cloudera Enterprise. You should review these notes before installing or upgrading your software. For general release notes about Cloudera Enterprise, see [Cloudera Enterprise 6 Release Guide](#) on page 5.

Error reported when upgrading Cloudera Manager Agents

When upgrading to Cloudera Manager 6.3.4, you will see the following error when upgrading the Cloudera Manager Agents:

```
supervisord version 3.4.0 does not match with SCM version 6.3.4. You must hard restart the agent to switch to the right version of supervisord.
```

You should ignore or suppress this message. Do not restart the agents.

Cloudera Bug: ENGESC-5109

Installation and Upgrade Changes

Installation or Upgrade of Cloudera Manager and CDH requires authentication to access downloads

Beginning with Cloudera Manager and CDH 6.3.3, downloading new versions of these products will require a valid Cloudera Enterprise license file, and/or a username and password obtained from Cloudera. All Cloudera Manager package, CDH parcel and CDH package repositories now require authentication with valid credentials to access any version numbered 6.3.3 or later. For more information on using these credentials, see the documentation below.

See:

- [Cloudera Manager Upgrade Guide](#)
- [CDH Upgrade Guide](#)
- [Cloudera Installation Guide](#)

Cloudera Express has been discontinued

Beginning with CDH 6.3.3 (and CDP Data Center 7.0), Cloudera Express is no longer available. Upgrades to Cloudera Manager or CDH 6.3.3 and higher are not supported when running Cloudera Express. A valid Cloudera Enterprise or CDP Data Center license must be in place before upgrading to Cloudera Manager 6.3.3 or 7.x or the upgrade will not be completed.

Downgrading from Cloudera Enterprise license to Cloudera Express license is also no longer supported in Cloudera Manager 6.3.3 and higher.



Note: An expired Cloudera Enterprise or CDP license, or an expired trial license will disable the Cloudera Manager Admin Console until a valid license key is provided.

Upgrades to Cloudera Manager 6.3 Fail with Hive Cloud replication schedules

If you have any Hive Replication Schedules that replicate to a cloud destination, delete these replication schedules before continuing with the upgrade. You can re-create these Replication Schedules after the Cloudera Manager upgrade is complete.

Cloudera Bug: OPSAPS-54117

Upgrades to Cloudera Enterprise 6.x

Using OpenJDK 11 on CDH6.3 and above requires re-installation of YARN MapReduce Framework JARs

Because several Java internal APIs are removed in JDK11, using older versions of MR Framework JARs will fail MR/Hive jobs, with the following error:

```

...
2019-07-18 14:54:52,483 ERROR [main] org.apache.hadoop.mapreduce.v2.app.MRAppMaster:
Error starting MRAppMaster
java.lang.NoSuchMethodError: sun.nio.ch.DirectBuffer.cleaner()Lsun/misc/Cleaner;
    at org.apache.hadoop.crypto.CryptoStreamUtils.freeDB(CryptoStreamUtils.java:41)
    at org.apache.hadoop.crypto.CryptoInputStream.freeBuffers(CryptoInputStream.java:687)

    at org.apache.hadoop.crypto.CryptoInputStream.close(CryptoInputStream.java:320)
    at java.base/java.io.FilterInputStream.close(FilterInputStream.java:180)
...

```

Workaround:

1. Go to the YARN service.
2. Select Actions > Install YARN MapReduce Framework JARs and click Install YARN MapReduce Framework JARs
3. To verify, you will find the new MR Framework JARs under the MR Application Framework Path (default: /user/yarn/mapreduce/mr-framework/) For example:

```

..
hdfs dfs -ls /user/yarn/mapreduce/mr-framework/
Found 5 items
-rw-r--r-- 332 yarn hadoop 215234466 2018-07-19 11:40
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.0-mr-framework.tar.gz
-rw-r--r-- 97 yarn hadoop 263033197 2018-05-18 18:38
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.x-mr-framework.tar.gz
-rw-r--r-- 331 yarn hadoop 222865312 2018-11-08 14:39
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.1.0-mr-framework.tar.gz
-rw-r--r-- 327 yarn hadoop 232020483 2019-02-25 22:46
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.2.0-mr-framework.tar.gz
-rw-r--r-- 326 yarn hadoop 234641649 2019-07-23 15:49
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.3.0-mr-framework.tar.gz
...

```

Cloudera Bug: CDH-81350

Cloudera Manager 6.1 does not substitute {{CONF_DIR}}/library.leveldbjni.path for YARN processes

After upgrading to Cloudera Manager 6.1 or 6.2, if the /tmp directory is mounted using the noexec flag, then starting or restarting YARN NodeManagers will fail for all CDH versions. Note that this change may cause configuration staleness on Cloudera Manager when upgrading to 6.3.0 for clusters running YARN.

Cloudera Bug: OPSAPS-50253

Restart of Impala and Hive required for Cloudera Manager 6.2 upgrade with ADLS

After upgrading to Cloudera Manager 6.2 or higher, Impala and Hive will be marked as stale for users running CDH 6.1 and using the ADLS Service. You will need to restart Hive and Impala before being able to connect to ADLS Gen2, but all previous functionality will continue to work without a restart. The configurations that will be marked stale are:

- fs.azure.account.auth.type
- fs.azure.account.oauth.provider.type
- fs.azure.account.oauth2.client.endpoint
- fs.azure.account.oauth2.client.id
- fs.azure.account.oauth2.client.secret.

Cloudera Bug: OPSAPS-47436

TSB-359 Backup and Disaster Recovery (BDR) HDFS and Hive Replications will fail on clusters running Cloudera Manager 6.1.0

Backup and Disaster Recovery (BDR) HDFS and Hive Replications will fail when replicating from secured (Kerberized) source clusters to destination clusters that have been upgraded to Cloudera Manager 6.1.0.

This also affects new installations of Cloudera Manager 6.1.0 on the destination cluster if an admin restarts the Cloudera Manager service.

Products affected: Cloudera Manager Backup and Disaster Recovery in a secure (Kerberized) environment

Releases affected: Cloudera Manager 6.1.0 (when used as the destination cluster of HDFS and/or Hive replication)

Users affected: Customers using HDFS or Hive Replication

Severity (Low/Medium/High): High

Root Cause and Impact:

In HDFS and Hive Replication, Cloudera Manager first runs a process on the destination cluster to verify if the replication is possible. Due to a bug, the source cluster is treated as an insecure (non-kerberized) cluster. As a result, replication fails.

You will see the exception `javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid credentials provided (Mechanism level: Fail to create credential. (63) - No service creds)]` in the process stderr logs.

Immediate action required: If you use BDR, do not upgrade a destination cluster to Cloudera Manager 6.1.0. Upgrade to Cloudera Manager 6.1.1 or higher when it becomes available.

If you have already upgraded your destination cluster to Cloudera Manager to 6.1.0, use the following workaround:

1. For an existing HDFS or Hive replication schedule, select **Actions > Edit Configuration**.
2. Save the schedule.

Please note that you will need to edit only one schedule even if you have multiple schedules.

Note: This workaround is not persistent. That is, if you restart the Cloudera Manager service, you must repeat the above workaround.

Cloudera Issue: OPSAPS-48865

Fixed in Cloudera Manager 6.1.1

Upgrades from Cloudera Enterprise 5.15 or 5.16 to 6.0x are not supported

You cannot upgrade to Cloudera Manager or CDH 6.0.0 from Cloudera Manager or CDH 5.15 or 5.16.

Upgrading to CDH 6.1.0 Enables Direct SQL mode in Hive service by default

For details about the Cloudera Manager `Enable Direct SQL` option, refer to [Hive Metastore Database](#).

Upgrades from Cloudera Enterprise 6.0 Beta Release to 6.x General Release Not supported

You cannot upgrade to any Cloudera Manager or CDH 6.x general release from the Cloudera Manager or CDH 6.0 Beta release.

Cloudera Express License Enforcement

Use of Cloudera Express is limited to a total of 100 hosts running CDH6.0 or later across all environments used by an organization..

Note the following:

- Cloudera Manager will not allow you to add hosts to a CDH 6.x cluster if the total number of hosts across all CDH 6.x clusters will exceed 100.

- Cloudera Manager will not allow you to upgrade any cluster to CDH 6.x if the total number of managed CDH6.x cluster hosts will exceed 100. If an upgrade from Cloudera Manager 6.0 to 6.1 fails due to this limitation, you must downgrade Cloudera Manager to version 6.0, remove some hosts so that the number of hosts is less than 100, then retry the upgrade.



Note: If you downgrade from Cloudera Enterprise to Cloudera Express and the number of managed hosts exceeds 100, Cloudera Manager will disable all cluster management commands except for commands used to stop a cluster. You will not be able to restart or otherwise use clusters while the total number of hosts exceeds 100. Use the Cloudera Manager Admin Console to remove some hosts so that the number of hosts is less than 100.

Affected Versions: CM 6.1 and higher

Cloudera Issue: OPSAPS-46868

Cloudera Data Science Workbench is Not Supported with Cloudera Enterprise 6.0

Cloudera Data Science Workbench is not supported with Cloudera Enterprise 6.0.x. Cloudera Data Science Workbench 1.5.0 (and higher) is supported with Cloudera Manager 6.1.x (and higher) and CDH 6.1.x (and higher).

Impala roles with SELECT or INSERT privileges receive REFRESH privileges during the upgrade

Due to the Sentry and Impala fine grained privileges feature in 5.16.0, if a role has the `SELECT` or `INSERT` privilege on an object in Impala before upgrading to CDH 5.16.0, that role will automatically get the `REFRESH` privilege during the upgrade.

Hue requires manual installation of psycopg2

If you are installing or upgrading to CDH 6.0.0 and using the PostgreSQL database for the Hue database, you must install psycopg2 2.5.4 or higher on all Hue hosts. See [Installing the psycopg2 Python package](#).

Cloudera Issue: OPSAPS-47080

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

CDH Upgrade fails to delete Solr data from HDFS

The CDH upgrade process fails to delete Solr data from HDFS and the recreated collections fail to be initialized due to the existing indexes.

Workaround: Perform the following steps *after* you run the CDH Upgrade wizard and *before* you finalize the HDFS upgrade:

1. Log in to the Cloudera Manager Admin Console.
2. Go to the Solr service page.
3. Stop the Solr service and dependent services. Click **Actions > Stop**.
4. Click **Actions > Reinitialize Solr State for Upgrade**.

5. Click **Actions > Bootstrap Solr Configuration**.
6. Start the Solr and dependent services. Click **Actions > Start**.
7. Click **Actions > Bootstrap Solr Collections**.

Affected Versions: CDH 6.0.0

Fixed Versions: Cloudera Manager 6.0.1

Cloudera Issue: OPSAPS-47502

Package Installation of CDH Fails

When you install CDH with packages from a custom repository, ensure that the version of CDH you select for **Select the version of CDH** matches the version of CDH for the custom repository. Selecting the CDH version and specifying a custom repository are done during the **Select Repository** stage of installation.

If the versions do not match, installation fails.

Affected Versions: Cloudera Manager 6.x

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: OPSAPS-45703

Uninstall CDH 5 Sqoop connectors for Teradata and Netezza before upgrading to CDH 6

Sqoop includes two connectors, one for Teradata and one for Netezza. The connectors are released in separate parcels and tarballs and can be installed in Cloudera Manager or manually. The versioning of the connectors takes the form `<connector_version>c<major_cdh_version>`. For example, 1.6c5 refers to the connector 1.6 for CDH 5. The manifest files do not prohibit installing the CDH 5 connectors on CDH 6, but they are not compatible with CDH 6.

If you have CDH 5 connectors installed, they will not be automatically upgraded during the CDH upgrade, and they are not compatible with CDH 6, so they should be uninstalled before the upgrade. Keeping the CDH 5 connectors will not cause the upgrade to fail, but instead will cause a failure to occur during Sqoop runtime. Cloudera will release the connectors for CDH 6 at a later time.

For more information about the Teradata and Netezza connectors, go to [Cloudera Enterprise Connector Documentation](#) and choose the connector and version to see the documentation for your connector.

Unsupported Sqoop options cause upgrade failures

New [fail-fast](#) checks for unsupported options were introduced in CDH 6. Users should check the jobs stored in their Sqoop metastore and remove all unsupported options. Some unsupported options were silently ignored in earlier CDH versions during upgrades, but in CDH 6, the same options fail instantly. See the following JIRAs in [Apache Sqoop Incompatible Changes](#):

Generated Avro code from CDH 5 should be regenerated when upgrading

Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.

Upgrading Apache Parquet to CDH 6

Parquet packages and the project's group ID were renamed, and some of the class methods were removed.

If you directly consumes the Parquet API instead of using Parquet through a CDH component, your need to update and recompile your code. See [Parquet API Change](#) for details of the changes.

No HBase Replication Peer Configuration Change During Rolling Update

When doing a rolling upgrade from a CDH 6 version to a higher version, do not do any replication peer configuration changes. This includes removing a peer, adding a peer, and changing the configuration on a peer.

Oracle Database Initialization

Before upgrading from CDH 5 to CDH 6, check the value of the `COMPATIBLE` initialization parameter in the Oracle Database using the following SQL query:

```
SELECT name, value FROM v$parameter WHERE name = 'compatible'
```

The default value is 12.2.0. If the parameter has a different value, you can set it to the default as shown in the [Oracle Database Upgrade Guide](#).



Note: Before resetting the `COMPATIBLE` initialization parameter to its default value, make sure you consider the effects of this change can have on your system.

TLS Protocol Error with OpenJDK

If you are using an older version of OpenJDK 1.8 and have enabled SSL/TLS for the Cloudera Manager Admin Console, you may encounter a TLS protocol error when connecting to the Admin Console, stating that there are no ciphers in common. This is because older versions of OpenJDK may not implement certain TLS ciphers, causing an inability to log into the Cloudera Manager Admin Console when TLS is enabled.

Workaround:

You can workaround this issue by doing one of the following:

- Upgrade OpenJDK to a [supported version of OpenJDK](#) that is higher than version 1.8.0_181.
- If it is not possible to upgrade OpenJDK, enable less secure TLS ciphers in Cloudera Manager. You can do this by opening the `/etc/default/cloudera-scm-server` in a text editor and adding the following line:

```
export CMF_OVERRIDE_TLS_CIPHERS=<cipher_list>
```

Where `<cipher_list>` is a list of TLS cipher suites separated by colons. For example:

```
export
```

Cloudera Bug: OPSAPS-49578

Restart Kafka after upgrading Cloudera Manager

After upgrading Cloudera Manager, Kafka will be marked as stale. At your next opportunity, please restart the Kafka service to allow these new metrics to be collected and new configurations to be effective. The configurations that will be marked stale are:

- `num.network.threads=8`
- `num.recovery.threads.per.data.dir=1`
- `num.replica.fetchers=4`
- `producer.metrics.enable`

Cloudera Bug: OPSAPS-49741

Upgrade Failure: active NameNode not found

On a Cloudera Manager cluster host running on either CentOS 7.0 or 7.1, performing a curl operation to access the NameNode web UI results in an error similar to the following if the web UI is SSL-enabled:

```
curl https://nn1.example.com:20102
curl: (35) Cannot communicate securely with peer: no common encryption algorithm(s).
```

This issue occurs on Cloudera Manager clusters running versions 6.1 and higher that exclude insecure ciphers by default. In addition, an SSL bug with curl on CentOS versions 7.0 and 7.1 prevents negotiation of a more secure SSL cipher with the HDFS NameNode web UI.

Workaround: Update yum packages to the latest available versions by running the following command:

```
yum update nss-util nss-sysinit nss-tools
```

Alternate workaround for Cloudera Manager 6.0: Specify the cipher by running the following command:

```
curl --tlsv1 --ciphers rsa_aes_256_cbc_sha_256 -k -v <hostname>:<port>
```

Alternate Workaround for Cloudera Manager 6.1 or higher:

1. Log into the Cloudera Manager Admin Console.
2. Go to the HDFS Service
3. Select the **Configuration** tab.
4. Locate the **SSL/TLS Cipher Suite** property
5. Select **Intermediate 2018 (Needed for legacy clients or Redhat 6)**.
6. Restart the HDFS service

Cloudera Bug: CDH-81328

Upgrades to Cloudera Enterprise 5.x

Flume Kafka client incompatible changes in CDH 5.8

Due to the change of offset storage from ZooKeeper to Kafka in the CDH 5.8 Flume Kafka client, data might not be consumed by the Flume agents, or might be duplicated (if `kafka.auto.offset.reset=smallest`) during an upgrade to CDH 5.8.

Cloudera Issue: TSB-173

Upgrade to CDH 5.13 or higher Requires Pre-installation of Spark 2.1 or Spark 2.2

If your cluster has Spark 2.0 or Spark 2.1 installed and you want to upgrade to CDH 5.13 or higher, you must first upgrade to Spark 2.1 release 2 or later before upgrading CDH. To install these versions of Spark, do the following before running the CDH Upgrade Wizard:

1. Install the Custom Service Descriptor (CSD) file. See
 - [Installing Spark 2.1](#)
 - [Installing Spark 2.2](#)



Note:

Spark 2.2 requires that JDK 1.8 be deployed throughout the cluster. JDK 1.7 is not supported for Spark 2.2.

See [Step 2: Install Java Development Kit](#).

2. Download, distribute, and activate the Parcel for the version of Spark that you are installing:
 - **Spark 2.1 release 2:** The parcel name includes "cloudera2" in its name.
 - **Spark 2.2 release 1:** The parcel name includes "cloudera1" in its name.

See [Managing Parcels](#).

Affected versions: CDH 5.13.0 and higher

Cloudera Issue: CDH-56775

Sentry may require increased Java heap settings before upgrading CDH to 5.13

Before upgrading to CDH 5.13 or higher, you may need to increase the size of the Java heap for Sentry. A warning will be displayed during upgrade, but it is the user's responsibility to ensure this setting is adjusted properly before proceeding. See [Performance Guidelines](#).

Affected versions: CDH 5.13 or higher

Cloudera Issue: OPSAPS-42541

Apache MapReduce Jobs May Fail During Rolling Upgrade to CDH 5.11.0 or CDH 5.11.1

In CDH 5.11, Cloudera introduced four new counters that are reported by MapReduce jobs. During a rolling upgrade from a cluster running CDH 5.10.x or lower to CDH 5.11.0 or CDH 5.11.1, a MapReduce job with an application master running on a host running CDH 5.10.x or lower may launch a map or reduce task on one of the newly-upgraded CDH 5.11.0 or CDH 5.11.1 hosts. The new task will attempt to report the new counter values, which the old application master will not understand, causing an error in the logs similar to the following:

```
2017-06-08 17:43:37,173 WARN [Socket Reader #1 for port 41187]
org.apache.hadoop.ipc.Server: Unable to read call parameters for client 10.17.242.22 on
connection protocol org.apache.hadoop.mapred.TaskUmbilicalProtocol for rpcKind
RPC_WRITABLE
java.lang.ArrayIndexOutOfBoundsException: 23
    at
    ...
```

This error could cause the task and the job to fail.

Workaround:

Avoid performing a rolling upgrade to CDH 5.11.0 or CDH 5.11.1 from CDH 5.10.x or lower. Instead, skip CDH 5.11.0 and CDH 5.11.1 if you are performing a rolling upgrade, and upgrade to CDH 5.12 or higher, or CDH 5.11.2 or higher when the release becomes available.

Cloudera Issue: DOCS-2384, TSB-241

Cloudera Manager set catalogd default jvm memory to 4G can cause out of memory error on upgrade to Cloudera Manager 5.7 or higher

After upgrading to 5.7 or higher, you might see a reduced Java heap maximum on Impala Catalog Server due to a change in its default value. Upgrading from Cloudera Manager lower than 5.7 to Cloudera Manager 5.8.2 no longer causes any effective change in the Impala Catalog Server Java Heap size.

When upgrading from Cloudera Manager 5.7 or later to Cloudera Manager 5.8.2, if the Impala Catalog Server Java Heap Size is set at the default (4GB), it is automatically changed to either 1/4 of the physical RAM on that host, or 32GB, whichever is lower. This can result in a higher or a lower heap, which could cause additional resource contention or out of memory errors, respectively.

Cloudera Issue: OPSAPS-34039

Cloudera Manager 6 Release Notes

These Release Notes provide information on the new features and known issues and limitations for Cloudera Manager 6. These Release Notes also include fixed issues for releases starting from Cloudera Manager 6.0.0.

For information about supported operating systems, and other requirements for using Cloudera Manager, see [Cloudera Enterprise 6 Requirements and Supported Versions](#) on page 5.

To view the Release Notes for a specific Cloudera Manager release, see below:

CVE 2021-44228 Remediation for Cloudera Enterprise 6.3.3 and 6.3.4

As mentioned in [Cloudera Technical Service Bulletin 2021-545](#) (Critical vulnerability in log4j2 CVE-2021-44228), the Cloudera Enterprise 6.3.3 and 6.3.4 (Cloudera Distributed Hadoop (CDH) and Cloudera Manager (CM) are impacted by the recent Apache Log4j2 vulnerability. As per that bulletin:

The Apache Security team has released a security advisory for CVE-2021-44228 which affects Apache Log4j2. A malicious user could exploit this vulnerability to run arbitrary code as the user or service account running the affected software. Software products using log4j versions 2.0 through 2.14.1 are affected and log4j 1.x is not affected. Cloudera is making short-term workarounds available for affected software and is in the process of creating new releases containing fixes for this CVE.

Short Term Resolution

Remediation steps are outlined in the [TSB-545 documentation](#).

Be aware that the following actions are pulling the vulnerable jar files back in action again:

- Scaling up cluster (adding a host to Cloudera Manager or the cluster)
- Redistributing the CDH parcels
- Reinstalling the Cloudera Manager packages

Long Term Resolution - installation of patched version on CDH and Cloudera Manager

Please follow the following instructions for upgrading:

- [Cloudera Manager](#)
- [CDH](#)

Please deactivate then remove the vulnerable parcels using this [documentation](#). No action needed on the OS packages as they will be replaced during the upgrade procedure.

Patches are available for the following GA versions of Cloudera Enterprise

- Cloudera Manager 6.3.3
- Cloudera Manager 6.3.4
- CDH 6.3.4
- CDH 6.3.3

Cloudera Manager 6.3.x Release Notes

To view release notes for specific Cloudera Manager 6.3.x releases, see the following:

Cloudera Manager 6.3.4 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.3.4:

What's New in Cloudera Manager 6.3.4

New configurable threshold for retention of stale processes information in the Cloudera Manager database.

Stale processes are ones that have been stopped. Cloudera Manager removes information about these stale processes from the Cloudera Manager Database after a configurable number of days. You can configure the number of days with the `STALE_PROCESS_THRESHOLD` configuration parameter under **Administration > Settings > Support**.

API to evict old audit table entries on demand

Cloudera Manager Audit records now can be periodically set for truncation. An admin user can now schedule this command to run, set a batch size of old records to be truncated and configure Cloudera Manager to only keep audit records by number of days.

Go to **Administration > Settings > Support** and search for Audit. Edit any of the following parameters:

- Last login audit
- Audit Records batch eviction size
- Audit Records Eviction Control
- Audit Records Eviction Frequency
- Audit Records Life Time

Diagnostic Bundle improvement - Increase number of Archivers and their respective timeouts

Cloudera Manager now anticipates the number of archivers and their respective timeouts based on the size of the cluster it manages. The archivers are used when diagnostic bundle collection occurs. You can also configure the following parameters to tune this behavior. Go to **Administration > Settings > Support** and search for "Diagnostic Bundle Scale Factor". The Scaling factor is directly proportional to the time taken to collect diagnostic bundle. Increase this value to reduce the timeouts during data collection

Cloudera Bug: OPSAPS-57532: Impala Thrift profile processing optimization

Executing query monitoring is 100 times faster and memory consumption of this functionality is 100 times reduced.

Restructure index creation process in Reports Manager

Reports Manager fsimage indexing time is reduced, so it can handle large fsimages in reasonable time.

Improve log scanning scalability in clusterstats

Fixed completed Impala query monitoring for large query profiles by improving log scanning scalability.

New configuration in Telemetry Publisher allowing the users to limit the amount of data exported in a given hour.

Enhanced to have Telemetry Publisher to show the chart with the amount of data exported by Cloudera Manager to Workload Experience Manager (WXM).

Add a configuration to Telemetry Publisher allowing the users to limit the amount of data exported in a given hour. Added the configuration "telemetry.databus.exportedDataThresholdPerHour" to Telemetry Publisher. The default behaviour will be as it is today. This configuration can be provided by the customers if they want to control the amount of data exported by Telemetry Publisher in one hour. The Telemetry publisher verifies the amount of data exported in the last one hour and if it crosses the specified threshold amount in bytes, it will skip exporting of the data till next hour.

Add tracer parameters to Monitor service

Tracer parameters are included in monitor service parameters.

Create new CM metrics for HBase 2.0 JMX RIT metrics

These HBase metrics are available in CM now:

- regions_in_transition_duration_num_ops
- regions_in_transition_duration_min
- regions_in_transition_duration_max
- regions_in_transition_duration_mean
- regions_in_transition_duration_25th_percentile
- regions_in_transition_duration_median
- regions_in_transition_duration_75th_percentile
- regions_in_transition_duration_90th_percentile
- regions_in_transition_duration_95th_percentile
- regions_in_transition_duration_98th_percentile
- regions_in_transition_duration_99th_percentile
- regions_in_transition_duration_99_9th_percentile

HBase 2.0 JMX SCAN metrics changed

Due to a HBase 2.0 change these metrics are no longer available in CM with CDH6+ :

- scan_next_rate
- scan_next_size_75th_percentile
- scan_next_size_95th_percentile

- scan_next_size_99th_percentile
- scan_next_size_max
- scan_next_size_mean
- scan_next_size_median
- scan_next_size_min
- scan_size_75th_percentile
- scan_size_95th_percentile
- scan_size_99th_percentile
- scan_size_max scan_size_mean
- scan_size_median
- scan_size_min
- scan_size_rate
- scan_time_75th_percentile
- scan_time_95th_percentile
- scan_time_99th_percentile
- scan_time_max scan_time_mean
- scan_time_median scan_time_min
- scan_time_rate

Fixed issues in Cloudera Manager 6.3.4

TSB-431: Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Cloudera Bug: OPSAPS-57033: HDFS configuration parameter FS_CHECKPOINT_DIR_LIST causes "Too few entries. The minimum is 1." error

In Cloudera Manager, for HDFS's Secondary Namenode role the parameter `FS_CHECKPOINT_DIR` cannot be set to null if the role is in-use. However, if the role is removed from the service (for example, if HDFS High Availability mode is enabled, then Secondary Namenode is removed automatically) .This parameter can now be set to null.

Cloudera Bug: OPSAPS-56398: Server needs to accept exported JAVA_HOME for Java 11

Cloudera Manager server can now accept a custom `JAVA_HOME` location for supported Java versions 8 and 11. In order to provide a `JAVA_HOME` path:

1. Log in to the Cloudera Manager server host as the root user.
2. Run the following command:

```
service cloudera-scm-manager stop
```

3. Add the following value to the `/etc/default/cloudera-scm-server` file:

```
export JAVA_HOME=/custom/java_home_path/
```

4. Run the following command:

```
service cloudera-scm-manager start
```

5. Ensure that the Cloudera Manager Server is running.
6. Go to **Cloudera Manager > Hosts > Host ConfigurationJava Home Directory** and set the custom `JAVA_HOME` path for hosts that also have Java installed on the custom path.
7. Restart all the roles for them to start using the new custom `JAVA_HOME` path.

Cloudera Bug: OPSAPS-56153: Diagnostic bundle uploads fail to authenticate with Proxy

Cloudera Manager diagnostic bundle uploads have fixed the 407 authentication exception issue, when a diagnostic bundle was uploaded using a proxy server with basic authentication.

Cloudera Bug: OPSAPS-56607: Monitor daemon fails to remove principal

Fixed the issue when Cloudera Manager Agent produces the following error when regenerating credentials for a service:

```
[18/Apr/2020 01:09:25 +0000] 13158 CredentialManager kt_renewer
WARNING Couldn't kinit as 'solr/lpc6001cdp02.grupocgd.com' using
/var/run/cloudera-scm-agent/process/1546364905-solr-SOLR_SERVER/solr.keytab - kinit:
Client's credentials have been revoked while getting initial credentials.
```

Cloudera Bug: OPSAPS-56650: Generate Missing Credentials Fails due to parsing issue

The components in DomainNames (DNs) like cn, dc, ou are valid even with whitespaces which causes the generate missing credentials script (`gen_credentials_ad.sh`) in Cloudera Manager to fail

Cloudera Bug: OPSAPS-56611: Failed to set a custom Cloudera Manager Server log location

Fixed the issue where relocation of Cloudera Manager Server log directory failed when following the documented steps to set the location of the Cloudera Manager server log.

Cloudera Bug: OPSAPS-55810: Cloudera Manager Host Resource page shows invalid Unit/Values for memory for Ozone roles

The **Cloudera Manager > Configuration** pages showing invalid "Memory Overcommit warnings" with incorrect units are now fixed.

OPSAPS-57587 Changes to how Cluster Templates handle null values

In Cloudera Manager, the cluster template contains key & value pairs of variables. However, keys without any value(s), get exported into the cluster template's json file. This can happen even if the Cloudera Manager Admin Console exposes the issue by showing up configuration warnings. Importing such templates to new clusters also introduces these warnings. Therefore, an export of such templates now requires the user to replace the 'null' value. Importing the template with such a key will fail with an error message.

Cloudera Bug: OPSAPS-44883: Error when installing MariaDB 10.2

Fixed an issue where a database statement fails with the following error while installing or upgrading Cloudera Manager: - "key column 'REVISION_ID' doesn't exist in table"

Cloudera Bug: OPSAPS-57607: Cloudera Manager fails to redact information

Fixed an issue where the Cloudera Manager Agent failed to redact with the following error: `UnicodeDecodeError: 'ascii' codec can't decode byte 0xc3 in position 36`

Cloudera Bug: OPSAPS-55143: Disable TLS for agent status server port on RHEL6

Fixed a file descriptor leak in the Cloudera Manager agent when running on Redhat 6 platform with TLS/SSL enabled for Cloudera Manager communications. The fix is to disable TLS/SSL for the Cloudera Manager agent status server port on Redhat 6. Heartbeat protocol and Navigator data (eg audit events) remain encrypted. 6.2.2 :

Fixed a file descriptor leak in the Cloudera Manager agent when running on all platforms with TLS/SSL enabled for Cloudera Manager communications. The fix is to disable TLS/SSL for the Cloudera Manager agent status server port. Heartbeat protocol and Navigator data (eg audit events) remain encrypted.

Cloudera Bug: OPSAPS-53158: Command Succeeded but fetching results failed" caused by file descriptor limit

Fixes file descriptor leak by the Cloudera Manager Agent's HTTP status server when Auto-TLS is enabled. The fix applies to all supported operating systems, except Redhat 6-based operating systems. Customers running on Redhat 6 should either upgrade to Redhat 7, or disable Agent TLS (via Administration -> Settings -> Security: Use TLS Encryption for Agents).

Cloudera Bug: OPSAPS-57254: Agent reporting hangs infinitely

Previously, if the agent encountered a problem with the SSL connection while reporting to the HostMonitor, reporting would hang indefinitely causing the entire node to be marked as in Bad Health. Now, a problem with the SSL connection will no longer block the agent from reporting.

Cloudera Bug: OPSAPS-55786: Excluding directory from disk usage report has no effect

Directories removed from HDFS will not appear in the Current Directory Usage report.

Cloudera Bug: OPSAPS-57249: Reports Manager unable to index 60G fsimage

Reports Manager is now able to process large fsimages.

Cloudera Bug: OPSAPS-57534: Reports Manager historical usage report loses data when a directory is removed from watched directories

Historical Disk Usage reports will not lose the already generated data of the directory after it is set to unwatched.

Cloudera Bug: OPSAPS-56242: External user authorization roles become mixed up when posting multiple mappings to API

When creating external role mappings via the /externalUserMappings API endpoint, if multiple mappings are given in the request, then later mappings will erroneously inherit roles specified in preceding mappings, thus granting those users or groups additional privileges than expected. This has been fixed. Note that existing role mappings that have already been created will not be fixed by this change. Cloudera recommends that you review your existing role mappings in Administration > Users and Roles to correct any inconsistencies.

Cloudera Bug: OPSAPS-57422: HBase 2.0 JMX GET metrics changed

Metrics removed in HBase2 are no longer polled by Cloudera Manager.

Cloudera Bug: OPSAPS-56024: HBase 2.0 JMX metrics changed - "AssingmentManger" is now renamed to "AssignmentManager"**Cloudera Bug: OPSAPS-56473: Solr shard splitting breaks monitoring**

Solr metrics were missing after a shard had been split in the cluster.

Cloudera Bug: OPSAPS-56586: Change default wal provider from AsyncFSWal to Filesystem

Added a new HBase configuration property: `hbase.wal.regiongrouping.delegate.provider`

Cloudera Bug: OPSAPS-56737: Get the thread naming patch merged

The names of Cloudera Manager Agent threads are now visible in operating system tools and follow a new scheme to improve supportability.

Cloudera Bug: OPSAPS-54869: agent - filesystem monitoring proper filtering

Fixed spurious errors about missing mounts logged by the agent when user runtime directories in /run/user are removed normally.

Cloudera Bug: OPSAPS-56714: Possible misinterpretation of Impala query endTime

Impala queries held open after they are finished (e.g. in Hue) now appear on the Impala query monitoring page of Cloudera Manager upon closure, without being logged as "outside acceptance window".

Cloudera Bug: OPSAPS-55356: Enhance CM to have Telemetry Publisher to show the chart with the amount of data exported to WXM.

OPSAPS-55356 Enhance CM to have Telemetry Publisher to show the chart with the amount of data exported to WXM. OPSAPS-55357 Add a configuration to Telemetry Publisher allowing the users to limit the amount of data exported in a given hour. Added the configuration "telemetry.databus.exportedDataThresholdPerHour" to Telemetry Publisher. There will not be UI provided for it. The default behaviour will be as it is today. This configuration can be provided by the customers if they want to control the amount data exported by Telemetry Publisher in one hour. The Telemetry publisher verifies the amount of data exported in last one hour and if it crosses the specified threshold amount in bytes, it will skip exporting of the data till next hour.

Cloudera Bug: OPSAPS-56762: Speed up replication diagnostic bundle collection

The performance of collecting Replication diagnostic bundles has been improved.

Cloudera Bug: OPSAPS-57245: schedule for BDR log retention limit should be triggered automatically, but it's not

Adding `command_schedules` during cluster creation

Cloudera Bug: OPSAPS-56341: Hive BDR fails between Isilon clusters after CM+CDH upgrade to 6x in target

Skipping using web HDFS client configurations for Isilon.

Cloudera Bug: OPSAPS-48770: Update invalidate metadata script to use backticks.

Even if table name starts with a number, the Impala invalidate metadata command succeeds after this fix.

Cloudera Bug: OPSAPS-43909: Exclusion Filter should also apply to Delete Policy

Exclusion filters apply to delete policy as well.

Cloudera Bug: OPSAPS-57291: HDFS replication for Isilon can't run remoteHdfsListing

Fixed for Isilon

Cloudera Bug: OPSAPS-57913: When decommissioning HDFS Datanodes, Cloudera Manager may prematurely report success when decommissioning is still in process in certain cases.

Cloudera Manager now correctly decommissions the Datanodes when HDFS high availability is enabled.

Cloudera Manager should now correctly wait the HDFS Datanodes to finish decommissioning. The reliability when HDFS high availability is enabled is also improved.

Known Issues in Cloudera Manager 6.3.4

Error reported when upgrading Cloudera Manager Agents

When upgrading to Cloudera Manager 6.3.4, you will see the following error when upgrading the Cloudera Manager Agents:

```
supervisord version 3.4.0 does not match with SCM version 6.3.4. You must hard restart the agent to switch to the right version of supervisord.
```

You should ignore or suppress this message. Do not restart the agents.

Cloudera Bug: ENGESC-5109

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Cloudera Manager 6.3.3 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.3.3:

New Features and Changes in Cloudera Manager 6.3.3

The following section describes new features for Cloudera Manager 6.3.3.

Installation and Upgrade Changes

Installation or Upgrade of Cloudera Manager and CDH requires authentication to access downloads

Beginning with Cloudera Manager and CDH 6.3.3, downloading new versions of these products will require a valid Cloudera Enterprise license file, and/or a username and password obtained from Cloudera. All Cloudera Manager package, CDH parcel and CDH package repositories now require authentication with valid credentials to access any version numbered 6.3.3 or later. For more information on using these credentials, see the documentation below.

See:

- [Cloudera Manager Upgrade Guide](#)
- [CDH Upgrade Guide](#)
- [Cloudera Installation Guide](#)

Cloudera Express has been discontinued

Beginning with CDH 6.3.3 (and CDP Data Center 7.0), Cloudera Express is no longer available. Upgrades to Cloudera Manager or CDH 6.3.3 and higher are not supported when running Cloudera Express. A valid Cloudera Enterprise or CDP Data Center license must be in place before upgrading to Cloudera Manager 6.3.3 or 7.x or the upgrade will not be completed.

Downgrading from Cloudera Enterprise license to Cloudera Express license is also no longer supported in Cloudera Manager 6.3.3 and higher.



Note: An expired Cloudera Enterprise or CDP license, or an expired trial license will disable the Cloudera Manager Admin Console until a valid license key is provided.

Support for RHEL 7.7

Cloudera Manager 5.16, 6.0.1, 6.1.1, 6.2.1, and Cloudera Manager 6.3.3 or higher are now certified for RHEL 7.7.

Parallel metrics roll-up

To improve performance, roll-up of monitoring metrics can now run in parallel by setting the following configurations in the **Service Monitor Advanced Configuration Snippet**:

- `firehose.timeseries.rollup.num.threads` – The default value is 1. Increase the value to improve performance.
- `firehose.timeseries.rollup.delay.minutes` – The default value is 0. Increase the value to improve performance.

Cloudera recommends trying the following settings to improve performance:

```
firehose.timeseries.rollup.num.threads=3
firehose.timeseries.rollup.delay.minutes=15
```

Cloudera Bug: OPSAPS-52549

Fixed Issues in Cloudera Manager 6.3.3

The following sections describe issues fixed in Cloudera Manager 6.3.3:

Cloudera Manager agent logs are not showing the correct timezone in the timestamp

Log entries in the `cloudera-scm-agent.log` log file now display timestamps with the correct offset based on the timezone of the host.

Cloudera Bug: OPSAPS-53925

Cloudera Manager API with SPENGO authentication is failing

Fixed an issue when both SAML and SPNEGO were enabled at the same time as external authentication options, SPNEGO login did not work.

Cloudera Bug: OPSAPS-53563

Chart positions are not preserved in the cluster homepage dashboard

Fixed an issue where the chart position customizations are not saved.

Cloudera Bug: OPSAPS-53562

Upgrade from CDH 5 to CDH 6 fails with a decommissioned host in bad health

Fixed an issue that caused upgrades to fail when a cluster has a decommissioned host that has a **Bad health** status.

Cloudera Bug: OPSAPS-53303

File Descriptor leak in Cloudera Manager Agent Status Server using TLS

Fixes a file descriptor leak by the Cloudera Manager Agent's HTTP status server when Auto-TLS is enabled. The fix applies to all supported operating systems, except for Redhat 6-based systems. Customers running on Redhat 6 should either upgrade to Redhat 7, or disable Agent TLS. (Go to **Administration > Settings > Security > Use TLS Encryption for Agents.**)

Cloudera Bug: OPSAPS-, OPSAPS-53158

JMX authentication fails for Kafka with OpenJDK 11

Fixed an issue where using JDK 11 with authentication enabled for JMX, clients such as Service Monitor and JConsole are unable to connect.

Cloudera Bug: OPSAPS-52793

Cloudera Manager Server will not start on Ubuntu 18.04 or 16.04

Fixes a "no such file or directory" error for `/opt/cloudera/cm/bin/cm-server-pre` when installing Cloudera Manager using the `installer.bin` proof-of concept installer on Ubuntu 18.04 or 16.04.

Cloudera Bug: OPSAPS-52687

Errors When Enabling Credential Regeneration for Active Directory Accounts Using Cloudera Manager

Fixed an error condition that occurred when the **Active Directory Delete Accounts on Credential Regeneration** property is enabled that caused a failure when regenerating credentials.

Cloudera Bug: OPSAPS-52277

Cloudera Manager Diagnostic Bundle Redaction is not working as expected

Redaction of log files in diagnostics bundle collection has been fixed.

Cloudera Bug: OPSAPS-51948

Unknown field "keepHostTemplates" breaks existing Cloudera Manager API clients

HostTemplates were missing from clusters created using a ClusterTemplate. This has been fixed by adding a new attribute, `keepHostTemplates` to the `ApiClusterTemplateInstantiator` endpoint. Cloudera Manager Java clients created before Cloudera Manager 6.1.0 will fail when encountering the new attribute in results. These clients must update to the Cloudera Manager 6.1.0 (or higher) client, to prevent this failure.

Cloudera Bug: OPSAPS-50252

Small diagnostic bundle uploads from Cloudera Manager failed for customers in Japan/Europe/US

Fixed an issue to avoid failure of diagnostics bundle uploads due to the following `TimeoutException`:

```
java.util.concurrent.ExecutionException: java.util.concurrent.ExecutionException:  
java.util.concurrent.TimeoutException: Read timeout to proxy/<IP address>:8080 of 60000  
ms
```

Cloudera Bug: OPSAPS-49351

Known Issues and Limitations in Cloudera Manager 6.3.3

The following sections describe known issues and limitations for Cloudera Manager 6.3.3:

Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.5 and later
- Cloudera Manager 6.0 until 6.3.3
- Cloudera Manager 7.1.x

Users affected: Users with admin role in Cloudera Manager can impact end users of the service.

Impact: In production clusters this can result in a cluster-wide service outage; Already observed for the YARN service and the HDFS service in a few clusters.

Severity: High

Action required:

- A workaround exists where instead of performing a restart we recommend performing a stop/start of the services.
- Issue is fixed in CM-6.3.4, CM-7.2.1 and above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Upgrades to Cloudera Manager 6.3 Fail with Hive Cloud replication schedules

If you have any Hive Replication Schedules that replicate to a cloud destination, delete these replication schedules before continuing with the upgrade. You can re-create these Replication Schedules after the Cloudera Manager upgrade is complete.

Cloudera Bug: OPSAPS-54117

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Cloudera Manager 6.3.1 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.3.1:

New Features and Changes in Cloudera Manager 6.3.1

The following section describes a new feature for Cloudera Manager 6.3.1.

See also [Fixed Issues in Cloudera Manager 6.3.1](#) on page 306.

Alerts are created when agent certificate is near expiring

Host and agent TLS certificate monitoring now sends an alert when the agent certificate is close to expiring. This complements the Cloudera Manager Server TLS certificate expiration monitoring.

Cloudera Bug: OPSAPS-51684

Fixed Issues in Cloudera Manager 6.3.1

The following sections describe issues fixed in Cloudera Manager 6.3.1:

Status Server allowed TLS version 1.1

TLS version 1.1 is no longer allowed on the Cloudera Manager Agent status server port 9000.

Cloudera Bug: OPSAPS-51594

Network Performance Bandwidth Test fails after first run

Fixed an issue where aborting the Network Performance Bandwidth test caused subsequent runs of the test to fail.

Cloudera Bug: OPSAPS-50994

Cloudera Manager server incorrectly hard codes YARN safe container-executor binary group to "yarn"

Cloudera manager now sets the process group for the YARN executor (yarn-ce) to be the value specified with the YARN parameter `yarn.nodemanager.linux-container-executor.group`". The default value is "yarn".

Cloudera Bug: OPSAPS-49720

Cloudera Manager Server will not start on Ubuntu version 8.04 or 16.04

Fixes the "no such file or directory error" for `/opt/cloudera/cm/bin/cm-server-pre` when installing Cloudera Manager using the proof-of-concept `installer.bin` on Ubuntu.

Cloudera Bug: OPSAPS-52687

Known Issues and Limitations in Cloudera Manager 6.3.1

The following sections describe known issues and limitations for Cloudera Manager 6.3.1:

Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.5 and later
- Cloudera Manager 6.0 until 6.3.3
- Cloudera Manager 7.1.x

Users affected: Users with admin role in Cloudera Manager can impact end users of the service.

Impact: In production clusters this can result in a cluster-wide service outage; Already observed for the YARN service and the HDFS service in a few clusters.

Severity: High

Action required:

- A workaround exists where instead of performing a restart we recommend performing a stop/start of the services.
- Issue is fixed in CM-6.3.4, CM-7.2.1 and above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Cloudera Manager installation fails on MariaDB 10.2.8 and later

When installing Cloudera Manager using MariaDB 10.2.8 or later, the Cloudera Manager web server doesn't come up and the install process ends with a failed status. The `cloudera-scm-server.log` includes the following SQL error:

```
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: SQL Error at 'UTF-8' line
57:
"alter table ROLE_CONFIG_GROUPS
drop column REVISION_ID"
Key column 'REVISION_ID' doesn't exist in table
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: Rolling back SQL
transaction.
2019-08-28 04:37:10,172 ERROR main:com.cloudera.enterprise.dbutil.SqlFileRunner: Exception
while executing ddl scripts.
com.mysql.jdbc.exceptions.jdbc4.MySQLSyntaxErrorException: Key column 'REVISION_ID'
doesn't exist in table
```

Note that MariaDB 10.2.8 is provided by default in some operating systems, including SLES 12 SP4.

Workaround: Replace the default MariaDB 10.2.x version with MariaDB 10.2.7.

Affected Versions: MariaDB 10.2.8 and later

Cloudera Issue: OPSAPS-52340

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

TLS does not work for Agent heartbeat

If you use Add Hosts Wizard to add a host and that host does not have the Linux `host` command line utility installed, the agent `config.ini` file on that host will have the Cloudera Manager Server's IP address in the `"server_host="`

line instead of the hostname. This will cause a problem if you enable TLS for agent to server communication because the agent will connect to the Cloudera Manager Server using the IP address and not the hostname. You can fix this problem by manually changing the "server_host=" to have the correct hostname.

Cloudera also recommends that you install the `host` utility for future use.

Cloudera Bug: OPSAPS-49273

Upgrade Failure: active NameNode not found

On a Cloudera Manager cluster host running on either CentOS 7.0 or 7.1, performing a `curl` operation to access the NameNode web UI results in an error similar to the following if the web UI is SSL-enabled:

```
curl https://nn1.example.com:20102
curl: (35) Cannot communicate securely with peer: no common encryption algorithm(s).
```

This issue occurs on Cloudera Manager clusters running versions 6.1 and higher that exclude insecure ciphers by default. In addition, an SSL bug with `curl` on CentOS versions 7.0 and 7.1 prevents negotiation of a more secure SSL cipher with the HDFS NameNode web UI.

Workaround: Update yum packages to the latest available versions by running the following command:

```
yum update nss-util nss-sysinit nss-tools
```

Alternate workaround for Cloudera Manager 6.0: Specify the cipher by running the following command:

```
curl --tlsv1 --ciphers rsa_aes_256_cbc_sha_256 -k -v <hostname>:<port>
```

Alternate Workaround for Cloudera Manager 6.1 or higher:

1. Log into the Cloudera Manager Admin Console.
2. Go to the HDFS Service
3. Select the **Configuration** tab.
4. Locate the **SSL/TLS Cipher Suite** property
5. Select **Intermediate 2018 (Needed for legacy clients or Redhat 6)**.
6. Restart the HDFS service

Cloudera Bug: CDH-81328

HDFS Replication with Sentry causes additional NameNode heap usage

While performing HDFS replication on clusters where Sentry is in use on either or both of the source and destination clusters, you must set the value of **Run on Peer as Username** to be the same as **Run as Username**. This action ensures that Sentry provided ACL data is not copied to the target cluster, which results in additional usage of NameNode heap in the target cluster.

Cloudera Bug: OPSAPS-50649

Restart Kafka after upgrading Cloudera Manager

After upgrading Cloudera Manager, Kafka will be marked as stale. At your next opportunity, please restart the Kafka service to allow these new metrics to be collected and new configurations to be effective. The configurations that will be marked stale are:

- num.network.threads=8
- num.recovery.threads.per.data.dir=1
- num.replica.fetchers=4
- producer.metrics.enable

Cloudera Bug: OPSAPS-49741

Limited IE 11 browser support

Many Cloudera Manager wizards, including Installation wizards and Add Service/Role wizards, cannot be completed when using Microsoft Internet Explorer version 11.x. To work around the issue, use another supported browser. See [Browser Requirements](#) on page 35.

Affected Versions: Cloudera Manager 6.3.0

Cloudera Bug: OPSAPS-51481

Cloudera Manager API Failure serving multiple API calls

If Cloudera Manager server logs list multiple warnings while serving multiple Cloudera Manager API calls and fails with HTTP 500 errors, Cloudera recommends that you reduce the level of caching at the hibernate level. The warning messages look similar to the following:

```
2019-07-13 01:45:55,657 WARN
C3P0PooledConnectionPoolManager[identityToken->2skykra31sef453dohob7|2b8bd14b]-AdminTaskTim
er:com.mchange.v2.async.ThreadPoolAsynchronousRunner:
com.mchange.v2.async.ThreadPoolAsynchronousRunner$DeadlockDetector
@20fc6e86 - APPARENT DEADLOCK!!! Creating emergency threads for unassigned pending
tasks!
```

Workaround:

1. Log in to the Cloudera Manager server host using ssh.
2. Stop the Cloudera Manager server.
3. Edit the `/etc/cloudera-scm-server/db.properties` file and append it with the following line:

```
com.cloudera.cmf.orm.hibernate.c3p0.max_statements=0
```

4. Start the Cloudera Manager server
5. Navigate to the Database Info page of Cloudera Manager at https://CM_Server:Port/cmf/debug/dbinfo in the Cloudera Manager UI.
6. Confirm that the `max_statements` hibernate property is 0.

OPSAPS-51576

Cloudera Manager 6.3.0 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.3.0:

New Features and Changes in Cloudera Manager 6.3.0

The following sections describe new and changed features for Cloudera Manager 6.3.0:

OpenJDK 11 support for Cloudera Manager and CDH 6.3 and higher

You can now use OpenJDK 11 with Cloudera Enterprise 6.3.

See:

- [Manually Migrating to OpenJDK](#)
- [Manually Installing OpenJDK](#)
- [Supported JDKs](#) on page 27

When you install OpenJDK 11 in your cluster, it uses the G1GC method for garbage collection for most services, which may require tuning to avoid overcommitting memory. See [Tuning JVM Garbage Collection](#).

OPSAPS-50993, OPSAPS-49390, OPSAPS-51643

Cloudera Manager Kerberos support for FreeIPA and Red Hat Identity Manager

Cloudera Manager now supports FreeIPA and RedHat Identity Manager as a Kerberos KDC type. See [Step 4: Enabling Kerberos Using the Wizard](#)

Cloudera Issue: OPSAPS-45833, OPSAPS-51348

SPNEGO/Kerberos support for Cloudera Manager Admin Console and API

The Cloudera Manager Admin Console and API now support Kerberos authentication (using SPNEGO). Only clients that can use SPNEGO (such as curl) are supported. The Swagger and Python SDKs for Cloudera Manager do not support SPNEGO.

With SPNEGO enabled, the Swagger-based Java and Python SDKs, as well as the older deprecated Java SDK, can still authenticate using HTTP Basic Authentication. The older deprecated Python SDK cannot. Do not enable SPNEGO if you are relying on the deprecated Python client for any operations.

You can enable SPNEGO/Kerberos authentication for the Cloudera Manager Admin Console and API by going to Settings > Administration > External Authentication > "Enable SPNEGO/Kerberos Authentication for the Admin Console and API" and checking the box. This requires a restart of Cloudera Manager to take effect. It also requires that Kerberos is enabled.

For more information, see [Configuring External Authentication and Authorization for Cloudera Manager](#).

Cloudera Issue: OPSAPS-49753, OPSAPS-24297

Cloudera Manager Server certificate expiration monitoring and alerting

Cloudera Manager now alerts you 60 days before the Cloudera Manager Server TLS certificate expires. You can view and modify the threshold values by searching for `Expiry` in the Cloudera Management Service configuration page.



Note: The TLS certificate expiry alert applies only to the Cloudera Manager Server certificate. It does not alert on upcoming certificate expirations for certificates used by other services.

Cloudera Issue: OPSAPS-35977

Auto-TLS Support for Root CA

For new cluster installations, auto-TLS can create and use an intermediate CA for an existing internal root CA. This creates a chain of trust to your existing internal root CA, and allows internal hosts that trust your root CA to access cluster web resources without browser security warnings.

This feature is not supported for existing clusters.

Cloudera Issue: OPSAPS-50063

Service and Host Monitor configurations for Garbage Collection

The Cloudera Manager Host monitor and Service Monitor now use G1GC garbage collection by default. You can change this by adding Java options in the **Java Configuration Options for Host Monitor** and **Java Configuration Options for Service Monitor** configuration properties (Go to **Clusters > Cloudera Management Service** and search for "java". See [Tuning JVM Garbage Collection](#)).

Cloudera Issue: OPSAPS-50123

New Configuration Parameters for JournalNode Syncer

Enable JournalNode Syncer has been added for CDH 6.3 and later. When enabled, a JournalNode will periodically synchronize edit logs with other JournalNodes.

Shared Edits Directory has been added for HDFS JournalNodes when High Availability is enabled, which allows the JournalNode Syncer to start and work correctly.

Cloudera Issue: OPSAPS-51249

New Kafka configuration parameters and metrics

New Kafka configurations and default values are now available in Cloudera Manager when using the CDK 4 Kafka distribution:

- num.network.threads=8
- num.recovery.threads.per.data.dir=1
- num.replica.fetchers=4 (default changed from 1)

New metrics:

- broker
- broker level topic
- controller
- fetch session cache
- log cleaner
- network
- replica manager
- session expire listener
- zookeeper client

Cloudera Issue: OPSAPS-49741

Simplified enabling Kerberos through Cloudera Manager templates

Added a new section called `enableKerberos` to the `instantiator` section of Cloudera Manager templates. For examples:

```
"instantiator": {
  "clusterName": "test",

  "enableKerberos": {
    "datanodeTransceiverPort" : <optional/default 1004>,
    "datanodeWebPort" : <optional/default 1006>
  },
  :
  :
```

This enables Kerberos on all the services in the template.

Cloudera Issue: OPSAPS-49704

Cluster Administrator role can now create and delete Data Context

Users with the Cluster Administrator role who can access only the base clusters in Virtual Private Cloud setups can now create and delete Data Contexts.

Cloudera Issue: OPSAPS-49478

New YARN Configuration Parameter

A new YARN configuration parameter, **Enable Container Launch Debug Information**, has been added and is disabled by default. Previously, this configuration had to be made using the **NodeManager Advanced Configuration Snippet for yarn-site.xml**.

Cloudera Issue: OPSAPS-50709

Kudu integration with Sentry

Cloudera Manager can now configure Kudu integration with Sentry.

Cloudera Issue: OPSAPS-50359

Network Performance Inspector now includes a bandwidth test

You can now test the bandwidth between clusters using the Network Performance Inspector. See [Inspecting Network Performance](#)

Cloudera Issue: OPSAPS-49682

Kafka support in Compute Clusters

You can now add the Kafka service to a compute cluster. Kafka will share the Sentry service across multiple Kafka instances.

Cloudera Issue: OPSAPS-49165

Improved Backup and Disaster Log Retention behaviour

When you are using a custom log location for BDR replication, automatic log expiration now purges these custom replication logs and metadata files, based on their purge settings. To maintain information for each replication schedule, it is important that user set valid paths for HDFS that are writable by an existing user.

OPSAPS-50880

Filtered HDFS NameNode and Hive MetaStore role logs included with BDR diagnostic bundles

Filtered HDFS NameNode and Hive MetaStore role logs originating from both source and target clusters are now included in replication diagnostic bundles. The logs can be filtered based on these criteria:

- Earliest start and latest end timestamps for all the replication runs within a diagnostic bundle
- The configured log level (defaults to `INFO`) on both the source and destination clusters for HDFS and Hive replication jobs.

The following role logs are included:

- HDFS NameNode (for HDFS and Hive replication jobs)
- Hive MetaStore (Hive replication)

Both source and destination role logs will be capped to a maximum of 201 MBs (this is the normal CDH role log size).

You configure these log collections using the following Advanced configuration snippets:

- **HDFS Replication Advanced Configuration Snippet (Safety Valve) for `hdfs-site.xml`**
- **Hive Replication Advanced Configuration Snippet (Safety Valve) for `hive-site.xml`**

Enter the following configuration parameters in the appropriate Advance Configuration Snippet for Hive or HDFS (default values are in brackets):

- `SKIP_HIVE_LOG_COLLECTION` [`false`]
- `SKIP_HDFS_LOG_COLLECITON` [`false`]
- `LOG_LEVEL` [`INFO`]
- `LOG_SEARCH_TIMEOUT_MILLIS` [`300000`]
- `LOG_ROLE_RESULT_LIMIT` [`10000`]
- `LOG_TOTAL_BYTES_LIMIT` [`210763776`]

Cloudera Issue: OPSAPS-49988

Option to disable metric rollup

You can now disable rollup of metrics over time. This can help increase performance of the Service Monitor. See [Disabling Metric rollup](#).

Cloudera Issue: OPSAPS-50149

Fixed Issues in Cloudera Manager 6.3.0

The following sections describes issues fixed in Cloudera Manager 6.3.0:

NFS Gateway Startup failure

The NFS Gateway does not start when using Jsvc libraries with a version higher than 1.0.11. This is fixed for CDH versions 6.3 and higher.

Cloudera Bug: OPSAPS-50516

Kudu UNIX and Hive UNIX group

The host inspector in CM 6.3.0 now checks for the existence of the Kudu UNIX user and group. It also checks whether the Kudu user is a member of the Hive UNIX group. When upgrading to the CDH 6.3.0 parcel, the Kudu UNIX user will automatically be added to the Hive UNIX group. When upgrading via packages, this step must be performed manually; The Host Inspector will alert the user to this issue.

Cloudera Bug: OPSAPS-50360

Telemetry Publisher does not start with SSL enabled

Telemetry Publisher failed to start when SSL was enabled. This issue was fixed.

Cloudera Bug: OPSAPS-49256

Web server versions revealed in Cloudera Manager components

Cloudera Manager Admin Console and debug web UIs no longer send the "Server" header in responses.

Cloudera Bug: OPSAPS-24215

Failure to fetch Solr metrics when using non-default znode

Solr metric collection was unable to fetch data when a non-default ZooKeeper znode was set.

Cloudera Bug: OPSAPS-47239

Chronyd sync status not detected in some configurations

Fixed host monitoring issue for hosts using the "chrony" time synchronization daemon. Cloudera Manager now recognizes configurations with peer sync mode or local clock sync mode, in addition to server sync mode.

Cloudera Bug: OPSAPS-51143

Diagnostic bundle has zero-length agent log zip files

Fixed a bug causing zero-length agent log zip files in diagnostic bundles

Cloudera Bug: OPSAPS-49208

Null values in cluster templates fail silently

Fixed an issue where "null" values are passed in a Cloudera Manager cluster template. Cloudera Manager no longer silently fails during service installation.

Cloudera Bug: OPSAPS-49740

Renaming a cluster or service caused a server error

Renaming a cluster did not work correctly in Cloudera Manager 6.2.0 and is now fixed.

Cloudera Bug: OPSAPS-50167

Some services show up as stale when no configurations have changed

Fixed an issue where Compute clusters were indicating stale configurations in the Cloudera Manager Admin Console when no changes in the configuration have been made.

Cloudera Bug: OPSAPS-49698

Duplicate log file links in Network Performance Inspector

Fixed an issue that occurred when running "Inspect Network Performance" or "Inspect Cluster Network Performance" in the Cloudera Manager Admin Console. Links to log files were incorrectly repeated in the command output display.

Cloudera Bug: OPSAPS-49555

Telemetry Publisher does not decrypt the truststore password when testing the Altus connection

Fixed a bug where the Test Altus Connection command failed when SSL was enabled.

Cloudera Bug: OPSAPS-50248

Some default parameters are not set when using user-created Role Groups

Fixed an issue with the usage of user-created Role Groups used in Cluster Templates. Users do not have to provide the values for all configurations in the cluster template. Cloudera Manager, while creating cluster, will select (and auto-configure) values for missing configurations.

Cloudera Bug: OPSAPS-49893

Too many warnings about ephemeral ports

In previous Cloudera Manager versions, setting a role configuration (for example, **HDFS DataNode HTTP Web UI Port**) to an ephemeral port (e.g., 50010) would generate as many warnings as the number of DataNodes, and there was no option to suppress the warning. Now, only one warning is generated and the **Suppress** button is available in the Cloudera Manager Admin Console.

Cloudera Bug: OPSAPS-50314

Error handling in case of multithreaded Hive replication

Multi-threaded Hive replication introduced in CM 5.15 generated errors that could not be suppressed using the `replication.hive.ignoreTableNotFound` and `replication.hive.ignoreDataBaseNotFound` properties in Advanced Configuration Snippets. This is now fixed so that the new errors can be suppressed.

Cloudera Bug: OPSAPS-49987

Custom replication log paths now use automatic log retention settings

Previously, custom replication log paths set by 'Log Path' and 'Directory for metadata file' replication arguments did not utilize automatic log retention settings. This is fixed.

Cloudera Bug: OPSAPS-50878

Cloudera Manager 6.1 does not substitute `{{CONF_DIR}}/library.leveldbjni.path` for YARN processes

After upgrading to Cloudera Manager 6.1 or higher, if the `/tmp` directory is mounted using the `noexec` flag, then starting or restarting YARN NodeManagers will fail for all CDH versions. Note that this change may cause configuration staleness on Cloudera Manager when upgrading to 6.3.0 for clusters running YARN.

Cloudera Bug: OPSAPS-50253

Key Trustee Clusters

The button to enable **Key Trustee Clusters** no longer appears on the Administration -> Security -> Status page. This configuration is not required.

Cloudera Bug: OPSAPS-45389

Incompatible Changes in Cloudera Manager 6.3

See below for incompatible changes in Cloudera Manager 6.3.0:

Scratch Directories for HiveServer 2 relocated

When using a virtual private cluster architecture, the scratch directories for Hive Server 2 are now located by default in the HDFS of the compute cluster.

Cloudera Bug: OPSAPS-49806

Ephemeral Port Validation do not appear for CDH 5.x clusters

Ephemeral port validation warnings will no longer appear in the Cloudera Manager Admin Console for clusters running CDH 5.x.

Cloudera Bug: OPSAPS-49646

Hue WebHDFS HTTP port defaults to HDFS on a base cluster

For Virtual Private Clusters, a Hue service on a compute cluster will prefer setting the WebHDFS URL to a base cluster HDFS role over a local HDFS role.

Cloudera Bug: OPSAPS-49469

Known Issues and Limitations in Cloudera Manager 6.3.0

The following sections describe known issues and limitations for Cloudera Manager 6.3.0:

Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.5 and later
- Cloudera Manager 6.0 until 6.3.3
- Cloudera Manager 7.1.x

Users affected: Users with admin role in Cloudera Manager can impact end users of the service.

Impact: In production clusters this can result in a cluster-wide service outage; Already observed for the YARN service and the HDFS service in a few clusters.

Severity: High

Action required:

- A workaround exists where instead of performing a restart we recommend performing a stop/start of the services.
- Issue is fixed in CM-6.3.4, CM-7.2.1 and above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Cloudera Manager installation fails on MariaDB 10.2.8 and later

When installing Cloudera Manager using MariaDB 10.2.8 or later, the Cloudera Manager web server doesn't come up and the install process ends with a failed status. The `cloudera-scm-server.log` includes the following SQL error:

```
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: SQL Error at 'UTF-8' line
57:
  "alter table ROLE_CONFIG_GROUPS
  drop column REVISION_ID"
  Key column 'REVISION_ID' doesn't exist in table
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: Rolling back SQL
transaction.
2019-08-28 04:37:10,172 ERROR main:com.cloudera.enterprise.dbutil.SqlFileRunner: Exception
while executing ddl scripts.
  com.mysql.jdbc.exceptions.jdbc4.MySQLSyntaxErrorException: Key column 'REVISION_ID'
doesn't exist in table
```

Note that MariaDB 10.2.8 is provided by default in some operating systems, including SLES 12 SP4.

Workaround: Replace the default MariaDB 10.2.x version with MariaDB 10.2.7.

Affected Versions: MariaDB 10.2.8 and later

Cloudera Issue: OPSAPS-52340

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x

- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

TLS does not work for Agent heartbeat

If you use Add Hosts Wizard to add a host and that host does not have the Linux `host` command line utility installed, the agent `config.ini` file on that host will have the Cloudera Manager Server's IP address in the `"server_host="` line instead of the hostname. This will cause a problem if you enable TLS for agent to server communication because the agent will connect to the Cloudera Manager Server using the IP address and not the hostname. You can fix this problem by manually changing the `"server_host="` to have the correct hostname.

Cloudera also recommends that you install the `host` utility for future use.

Cloudera Bug: OPSAPS-49273

Upgrade Failure: active NameNode not found

On a Cloudera Manager cluster host running on either CentOS 7.0 or 7.1, performing a curl operation to access the NameNode web UI results in an error similar to the following if the web UI is SSL-enabled:

```
curl https://nn1.example.com:20102
curl: (35) Cannot communicate securely with peer: no common encryption algorithm(s).
```

This issue occurs on Cloudera Manager clusters running versions 6.1 and higher that exclude insecure ciphers by default. In addition, an SSL bug with curl on CentOS versions 7.0 and 7.1 prevents negotiation of a more secure SSL cipher with the HDFS NameNode web UI.

Workaround: Update yum packages to the latest available versions by running the following command:

```
yum update nss-util nss-sysinit nss-tools
```

Alternate workaround for Cloudera Manager 6.0: Specify the cipher by running the following command:

```
curl --tlsv1 --ciphers rsa_aes_256_cbc_sha_256 -k -v <hostname>:<port>
```

Alternate Workaround for Cloudera Manager 6.1 or higher:

1. Log into the Cloudera Manager Admin Console.
2. Go to the HDFS Service
3. Select the **Configuration** tab.
4. Locate the **SSL/TLS Cipher Suite** property
5. Select **Intermediate 2018 (Needed for legacy clients or Redhat 6)**.
6. Restart the HDFS service

Cloudera Bug: CDH-81328

HDFS Replication with Sentry causes additional NameNode heap usage

While performing HDFS replication on clusters where Sentry is in use on either or both of the source and destination clusters, you must set the value of **Run on Peer as Username** to be the same as **Run as Username**. This action ensures that Sentry provided ACL data is not copied to the target cluster, which results in additional usage of NameNode heap in the target cluster.

Cloudera Bug: OPSAPS-50649

Restart Kafka after upgrading Cloudera Manager

After upgrading Cloudera Manager, Kafka will be marked as stale. At your next opportunity, please restart the Kafka service to allow these new metrics to be collected and new configurations to be effective. The configurations that will be marked stale are:

- num.network.threads=8
- num.recovery.threads.per.data.dir=1
- num.replica.fetchers=4
- producer.metrics.enable

Cloudera Bug: OPSAPS-49741

Limited IE 11 browser support

Many Cloudera Manager wizards, including Installation wizards and Add Service/Role wizards, cannot be completed when using Microsoft Internet Explorer version 11.x. To work around the issue, use another supported browser. See [Browser Requirements](#) on page 35.

Affected Versions: Cloudera Manager 6.3.0

Cloudera Bug: OPSAPS-51481

Network Performance Inspector Bandwidth test must be manually reset after aborting the command

If you launch the Network Performance Inspector, and then abort the command before it completes, you will need to manually kill the `iperf3` utility in order to run the inspector again.

Workaround:

Log in to each host that was selected for inspection and do the following:

1. Run the following command to find the `iperf3` process:

```
ps -ef | grep iperf3
```

The output will look similar to the following:

```
clouder+  2493      1  0 11:11 ?          00:00:05 ./iperf3 -s
root      8091    1882  0 11:50 pts/0    00:00:00 grep --color=auto iperf3
```

2. Locate the process ID for the `iperf3` process owned by the `clouder+` user, in this example the process ID is **2493**.
3. Run the following command to kill the `iperf3` process:

```
kill -9 2493
```

Affected Versions: Cloudera Manager 6.3.0

Cloudera Bug: OPSAPS-50994

Fixed Versions: CM 6.3.1

Cloudera Manager API Failure serving multiple API calls

If Cloudera Manager server logs list multiple warnings while serving multiple Cloudera Manager API calls and fails with HTTP 500 errors, Cloudera recommends that you reduce the level of caching at the hibernate level. The warning messages look similar to the following:

```
2019-07-13 01:45:55,657 WARN
C3P0PooledConnectionPoolManager[identityToken->2skykra31sef453dohob7|2b8bd14b]-AdminTaskTim
er:com.mchange.v2.async.ThreadPoolAsynchronousRunner:
com.mchange.v2.async.ThreadPoolAsynchronousRunner$DeadlockDetector
@20fc6e86 - APPARENT DEADLOCK!!! Creating emergency threads for unassigned pending
tasks!
```

Workaround:

1. Log in to the Cloudera Manager server host using ssh.
2. Stop the Cloudera Manager server.
3. Edit the `/etc/cloudera-scm-server/db.properties` file and append it with the following line:

```
com.cloudera.cmf.orm.hibernate.c3p0.max_statements=0
```

4. Start the Cloudera Manager server
5. Navigate to the Database Info page of Cloudera Manager at https://CM_Server:Port/cmf/debug/dbinfo in the Cloudera Manager UI.
6. Confirm that the `max_statements` hibernate property is 0.

OPSAPS-51576

Cloudera Manager 6.2.x Release Notes

To view release notes for specific Cloudera Manager 6.2.x releases, see the following:

[Cloudera Manager 6.2.1 Release Notes](#)

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.2.1:

[New Features in Cloudera Manager 6.2.1](#)

The following sections describe new and changed features for Cloudera Manager 6.2.1:

There are no new features in Cloudera Manager 6.2.1. See also [Fixed Issues in Cloudera Manager 6.2.1](#) on page 318.

[Fixed Issues in Cloudera Manager 6.2.1](#)

The following sections describes issues fixed in Cloudera Manager 6.2.1:

Fix empty page for BDR schedule history page

Fixed an issue where the Replication History page for BDR replication jobs involving cloud accounts (Amazon S3, Microsoft Azure) did not render.

Cloudera Bug: OPSAPS-50325

Telemetry Publisher does not decrypt the truststore password when doing "Test Altus Connection"

Fixed an issue where the Test Altus Connection command failed when SSL was enabled.

Cloudera Bug: OPSAPS-50248

After renaming a cluster to `\cluster\`, any further attempt to rename the cluster results in a server error

The cluster/service rename feature did not work correctly in CM 6.2.0 and is now fixed.

Cloudera Bug: OPSAPS-50167

Fix error handling in case of multithreaded Hive replication

Multi-threaded Hive replication introduced in CM 5.15 generated errors which could not be suppressed using the `replication.hive.ignoreTableNotFound` and `replication.hive.ignoreDataBaseNotFound` safety valves. This is now fixed so that the new errors can be suppressed.

Cloudera Bug: OPSAPS-49987

Status server port 9000 needs TLS version and cipher control

TLS version 1 is now disallowed on Cloudera Manager Agent status server port 9000.

Cloudera Bug: OPSAPS-49897

Broken links in cm_ext wiki (https://github.com/cloudera/cm_ext/wiki)

Broken links under the `cm_ext` wiki (https://github.com/cloudera/cm_ext/wiki) are now fixed.

Cloudera Bug: OPSAPS-49825

Set a default for `hive.exec.scratchdir` for hive execution service

When using a virtual private cluster architecture, the scratch directories for Hive Server 2 are now located by default in the HDFS of the compute cluster.

Cloudera Bug: OPSAPS-49806

`isHDFSUsingSSL` needs to be set to true if autoTLS is enabled

When AutoTLS is enabled, and if Kerberos has already been setup, then an Configure Kerberos step appears when you try to create a regular cluster. In this step, the default value of the two ports, datanode transceiver port and datanode web port, are set to values below 1024. These default values are incorrect because these two port values need to be above 1024 for a secure Kerberized cluster. There was no way to configure these values correctly until now. The only work around previously was not to enable Kerberos during cluster creation.

Cloudera Bug: OPSAPS-49747

CM server incorrectly hard codes YARN safe container-executor binary group to "yarn"

Cloudera Manager will set the process group for the YARN executor (`yarn-ce`) to be the value that the YARN parameter `"yarn.nodemanager.linux-container-executor.group"` is set to. The default is `"yarn."`

Cloudera Bug: OPSAPS-49720

Some services show up as stale though no configurations are changed

Fixed an issue where compute clusters were indicating stale configurations in the Cloudera Manager Admin Console when no changes in the configuration have been made.

Cloudera Bug: OPSAPS-49698

Ephemeral Port Validation is causing a lot of configuration warnings to show up

In previous Cloudera Manager versions, setting a role config (e.g., HDFS DataNode HTTP Web UI Port) to an ephemeral port (e.g., 50010) would generate as many warnings as the number of DataNodes, which could not be suppressed. Now, only one warning is generated and the suppress button is available in the UI.

Cloudera Bug: OPSAPS-49646

Network perf detail result repeated

Fixed an issue that occurred when running "Inspect Network Performance" or "Inspect Cluster Network Performance" in the Cloudera Manager Admin Console. Links to log files were incorrectly repeated in the command output display.

Cloudera Bug: OPSAPS-49555

Hue WebHDFS HTTP port needs to default to base HDFS

For Virtual Private Clusters, a Hue service on a compute cluster will prefer setting the WebHDFS URL to a base cluster HDFS role over a local HDFS role. This is a new behavior.

Cloudera Bug: OPSAPS-49469

Disabled management web UI ports cause management roles to fail to start up after CM 6 upgrade

Fixed an issue where SMON and HMON services failed to start after disabling management web UI ports.

Cloudera Bug: OPSAPS-49111

Known Issues and Limitations in Cloudera Manager 6.2.1

The following sections describe known issues and limitations for Cloudera Manager 6.2.1:

Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.5 and later
- Cloudera Manager 6.0 until 6.3.3
- Cloudera Manager 7.1.x

Users affected: Users with admin role in Cloudera Manager can impact end users of the service.

Impact: In production clusters this can result in a cluster-wide service outage; Already observed for the YARN service and the HDFS service in a few clusters.

Severity: High

Action required:

- A workaround exists where instead of performing a restart we recommend performing a stop/start of the services.
- Issue is fixed in CM-6.3.4, CM-7.2.1 and above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Cloudera Manager installation fails on MariaDB 10.2.8 and later

When installing Cloudera Manager using MariaDB 10.2.8 or later, the Cloudera Manager web server doesn't come up and the install process ends with a failed status. The `cloudera-scm-server.log` includes the following SQL error:

```
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: SQL Error at 'UTF-8' line
57:
"alter table ROLE_CONFIG_GROUPS
drop column REVISION_ID"
Key column 'REVISION_ID' doesn't exist in table
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: Rolling back SQL
transaction.
2019-08-28 04:37:10,172 ERROR main:com.cloudera.enterprise.dbutil.SqlFileRunner: Exception
while executing ddl scripts.
com.mysql.jdbc.exceptions.jdbc4.MySQLSyntaxErrorException: Key column 'REVISION_ID'
doesn't exist in table
```

Note that MariaDB 10.2.8 is provided by default in some operating systems, including SLES 12 SP4.

Workaround: Replace the default MariaDB 10.2.x version with MariaDB 10.2.7.

Affected Versions: MariaDB 10.2.8 and later

Cloudera Issue: OPSAPS-52340

Cloudera Manager 6.2.0 does not have the correct license notification

Cloudera Manager 6.2.0 contains the third-party license notification for a previous release. You can view the correct license notification file [here](#) or on the [Third-party License Page for Cloudera Manager](#).

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Limitations for Virtual Private Clusters

There are a number of limitations and considerations for running Virtual Private Clusters, including the types of services you can run on a Compute cluster and supported versions of CDH. See [Compatibility Considerations for Virtual Private Clusters](#).

Restart of Impala and Hive required for Cloudera Manager 6.2 upgrade with ADLS

After upgrading to Cloudera Manager 6.2 or higher, Impala and Hive will be marked as stale for users running CDH 6.1 and using the ADLS Service. You will need to restart Hive and Impala before being able to connect to ADLS Gen2, but all previous functionality will continue to work without a restart. The configurations that will be marked stale are:

- fs.azure.account.auth.type
- fs.azure.account.oauth.provider.type
- fs.azure.account.oauth2.client.endpoint
- fs.azure.account.oauth2.client.id
- fs.azure.account.oauth2.client.secret.

Cloudera Bug: OPSAPS-47436

Add Hive Execution Service on Compute Cluster for Hue

To enable Hue to run Hive queries on a Compute cluster, you must install the **Hive Execution Service** on the Compute cluster.

Alternately, you can disable the Hive editor in Hue to prevent users from using it (it will not work correctly) by doing the following:

1. In the Cloudera Manager Admin console, go to the Hue service on the Compute cluster.
2. Open the **Hue Web UI**.
3. Select **Admin > Manage Users**.
4. Select the **Group** tab.
5. Click on the row containing the **default** group.

6. De-select the **beeswax.access:Launch this application** permission.

7. Click **Update Group**.

Cloudera Bug: DOCS-4438 OPSAPS-49062

BDR invalidate metadata command

When running a Hive replication job, the **invalidate metadata** command is run automatically by the replication job and runs as the **impala** user. If an administrator has configured a different user with permissions to run the **invalidate metadata** command, the command fails.

Workaround: Grant the Impala user permission to run the **invalidate metadata** command.

Cloudera Bug: OPSAPS-44327

TLS Protocol Error with OpenJDK

If you are using an older version of OpenJDK 1.8 and have enabled SSL/TLS for the Cloudera Manager Admin Console, you may encounter a TLS protocol error when connecting to the Admin Console, stating that there are no ciphers in common. This is because older versions of OpenJDK may not implement certain TLS ciphers, causing an inability to log into the Cloudera Manager Admin Console when TLS is enabled.

Workaround:

You can workaround this issue by doing one of the following:

- Upgrade OpenJDK to a [supported version of OpenJDK](#) that is higher than version 1.8.0_181.
- If it is not possible to upgrade OpenJDK, enable less secure TLS ciphers in Cloudera Manager. You can do this by opening the `/etc/default/cloudera-scm-server` in a text editor and adding the following line:

```
export CMF_OVERRIDE_TLS_CIPHERS=<cipher_list>
```

Where `<cipher_list>` is a list of TLS cipher suites separated by colons. For example:

```
export
```

Cloudera Bug: OPSAPS-49578

Cloudera Manager 6.2.0 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.2.0:

New Features and Changes in Cloudera Manager 6.2.0

The following sections describe new and changed features for Cloudera Manager 6.2.0:

Virtual Private Clusters - Separation of Compute and Storage services

A Virtual Private Cluster uses the Cloudera Shared Data Experience (SDX) to simplify deployment of both on-premise and cloud-based applications and enable workloads running in different clusters to securely and flexibly share data.

A new type of cluster is available in CDH 6.2, called a *Compute cluster*. A Compute cluster runs computational services such as Impala, Spark, or YARN but you configure these services to access data hosted in another Regular CDH cluster, called the *Base cluster*. Using this architecture you can separate compute and storage resources in a variety of ways to flexibly maximize resources.

See [Virtual Private Clusters and Cloudera SDX](#).

Ubuntu 18 Support

Support for Ubuntu 18.04 has been added for Cloudera Manager and CDH 6.2 and higher.

Cloudera Issue: OPSAPS-48410

Backup and Disaster Recovery (BDR)

Hive Direct Replication to S3/ADLS Backed Cluster

BDR now supports Hive direct replication from on-premise to S3/ADLS clusters and metadata replication to the Hive Metastore.

Using a single replication process, BDR enables Hive data to be pulled from HDFS to S3/ADLS clusters and use the "Hive-on-cloud" mode, where the target Hive Metastore updates the table locations to point to S3/ADLS clusters. This process facilitates easy data migration and synchronisation between the cloud and on-premise clusters.

For more information, see [Hive/Impala Replication](#).

Replication to and from ADLS Gen2

You can now replicate HDFS files and Hive data to and from Microsoft ADLS Gen2. To use ADLS Gen2 as the source or destination, you must add Azure credentials to Cloudera Manager. Note that the URI format for ADLS Gen2 is not the same as ADLS Gen1. For ADLS Gen2 use the following URI format:

```
abfs[s]://<file_system>@<account_name>.dfs.core.windows.net/<path>/.
```

Hosts

Duplicate Host Detection and Hostname Migration

Cloudera Manager now detects and rejects duplicate hosts from joining a cluster and gracefully tolerates > changes in hostnames for managed hosts, better supporting automated deployments

Installation

Accumulo Initialization

An Initialize Accumulo checkbox now displays in the Installation wizard.

Cloudera Issue: OPSAPS-48619

JDBC URL for the Hive Metastore Database Connection

You can now specify a JDBC URL when establishing a connection from the Hive service to a supported backend database (MySQL, PostgreSQL, or OracleDB). Enter the JDBC URL on the Setup Database page in the Create Cluster and Create Service wizards in Cloudera Manager.

Cloudera Issue: OPSAPS-48668

Licensing

Start and Deactivation Dates for Cloudera Enterprise Licenses

Cloudera Enterprise licenses now include a start date and a deactivation date. Enterprise-only features are enabled on the start date and will be disabled after the deactivation date. If you install the license before the start date, a banner displays in the Cloudera Manager Admin console showing the number of days until the license becomes effective.

Cloudera Issue: OPSAPS-47500

Enhanced License Enforcement - Node Limit

When an Enterprise license expires, Cloudera Manager reverts to the Express version. This includes enforcing a maximum of 100 nodes across all CDH 6 clusters.

Cloudera Issue: OPSAPS-48611

Enhanced License Enforcement - Feature Availability

Features only available with a Cloudera Enterprise license are turned off after the deactivation date has passed. For legacy licenses that do not have a deactivation date, the features are turned off on the expiration date.

Cloudera Issue: OPSAPS-46864

Enhanced License Enforcement - KMS Configuration

Cloudera Manager will not allow KMS configuration changes after the deactivation date specified in the new license file although the KMS will remain functional. For legacy licenses, the deactivation date defaults to the expiration date specified in the license.

Cloudera Issue: OPSAPS-48501

Cloudera Manager API

Cross-Cluster Network Bandwidth Test

Cloudera Manager now has an API to test network bandwidth between clusters, helping determine if the infrastructure is suitable for separating storage and compute services.

For more information, see the following entries in the [Cloudera Manager REST API documentation](#):

- [POST /cm/commands/clustersPerfInspector](#)
- [ApiClustersPerfInspectorArgs](#)
- [ApiPerfInspectorBandwidthArgs](#)

API for Managing Expiring Cloudera Manager Sessions

There is a new Cloudera Manager API endpoint, `/users/expireSessions/{UserName}` that can be invoked by a user with the Full administrator or User administrator role that expires all of a particular user's active Cloudera Manager Admin console sessions - local or external. Please refer to the [Cloudera Manager REST API documentation](#) for more information.

Cloudera Issue: OPSAPS-43756

Service Type Information in the ApiServiceRef

The Cloudera Manager API endpoint `ApiServiceRef` now returns the service type. Please refer to the [Cloudera Manager REST API documentation](#) for more information.

Cloudera Issue: OPSAPS-48369

API to Emit All Features Available

A new attribute/property `features` has been added to the API endpoint `/cm/license`. It lists all the features that are available in the product for the given license. For example:

```
{ "owner" : "John Smith", "uuid" : "12c8052f-d78f-4a8e-bba4-a55a2d141fcc",  
  "features" : [ { "name" : "PEERS", "description" : "Peers" }, { "name" :  
  "BDR", "description" : "BDR" }, { "name" : "KERBEROS", "description" :  
  "Kerberos" }, . . .
```

Please refer to the [Cloudera Manager REST API documentation](#) for more information.

Cloudera Issue: OPSAPS-49060

New Name Attribute for ApiAuthRole

ApiAuthRole entities can now be specified and looked up with a name string for the role, as specified in the API documentation. Please refer to the [Cloudera Manager REST API documentation](#) for more information.

Cloudera Issue: OPSAPS-46780

Kafka Configuration and Monitoring

New Kafka Metrics

The following metrics have been added:

- `kafka_topic_unclean_leader_election_enable_rate_and_time_ms`
- `kafka_incremental_fetch_session_evictions_rate` -
- `kafka_num_incremental_fetch_partitions_cached` -
- `kafka_num_incremental_fetch_sessions`
- `kafka_groups_completing_rebalance`
- `kafka_groups_dead`
- `kafka_groups_empty`
- `kafka_groups_preparing_rebalance`
- `kafka_groups_stable`

- `kafka_zookeeper_request_latency`
- `kafka_zookeeper_auth_failures`
- `kafka_zookeeper_disconnects`
- `kafka_zookeeper_expires`
- `kafka_zookeeper_read_only_connects`
- `kafka_zookeeper_sasl_authentications`
- `kafak_zookeeper_sync_connects`

The following metric is deprecated: `kafka_responses_being_sent`

Cloudera Issue: OPSAPS-48911, OPSAPS-48798, OPSAPS-48311, OPSAPS-48656

Kafka Broker ID Display

Kafka Broker IDs are now displayed on the Cloudera Manager's Kafka Instances page.

Cloudera Issue: OPSAPS-44331

Kafka Topics in the diagnostic bundle

Diagnostic bundles for Kafka will now include the output of the following commands:

- `kafka-topics --describe`
- `kafka-topics --list`

Cloudera Issue: OPSAPS-36755

Kafka Configuration Properties for Delegation Tokens

The following new configuration parameters required to configure Kafka delegation tokens have been added:

- `delegation.token.max.lifetime.ms`
- `Delegation.token.expiry.time.ms`

The token has a maximum lifetime beyond which it cannot be renewed anymore. Default value 7 days.

The token validity time in seconds before the token needs to be renewed. Default value 1 day.

Cloudera Issue: OPSAPS-47051

Enhanced Security for Kafka in Zookeeper with ACLs

A new script, `zookeeper-security-migration.sh` script is now available to lock down Kafka data in Zookeeper. See [Kafka Security Hardening with Zookeeper ACLs](#).

Cloudera Issue: OPSAPS-47988

Hive Server 2

New Graph for the Compilation Metrics

A new graph, **Operations Awaiting Compilation** for HiveServer2 compilation metrics has been added.

Cloudera Issue: OPSAPS-47506

Secured ADLS Credentials for HS2

ADLS credentials are now stored securely via Cloudera Manager for use with HS2. This enables multi-user Hive-with-ADLS clusters.

Learn more at [Configuring ADLS Access Using Cloudera Manager](#).

Cloudera Issue: OPSAPS-49076

Secured S3 Credentials HS2 on S3

S3 credentials are now stored securely by Cloudera Manager for use with Hive. This enables multi-user Hive-on-S3 clusters.

Learn more at [Configuring the Amazon S3 Connector](#).

The following sub-tasks are related to this feature:

- Distribute the path of the HDFS credential store file and decryption password to HS2
Adds job credstore path and decryption password propagation for HS2.
Cloudera Issue: OPSAPS-48662
- Manage an encrypted credential store in HDFS for HS2
Adds a job specific credstore for HS2.
Cloudera Issue: OPSAPS-48661
- Rotate the password and the encrypted credential file in HDFS on every HS2 restart
Adds password and credstore file rotation on every HS2 role restart.
Cloudera Issue: OPSAPS-48663

delegation.token.master.key Generation

`delegation.token.master.key` is now automatically generated by Cloudera Manager/.

Cloudera Issue: OPSAPS-48525

New Warning for Hue Advanced Configuration Snippet

Warnings will be emitted if the values for **Hue Service Advanced Configuration Snippet** or **Hue Server Advanced Configuration Snippet** are not formatted properly. For example, if it does not contain a configuration section like `[desktop]`.

Cloudera Issue: OPSAPS-27606

Increased Default Value for `dfs.client.block.write.locateFollowingBlock.retries` configuration

The default value for the HDFS configuration `dfs.client.block.write.locateFollowingBlock.retries` configuration's has been changed from 5 to 7.

Cloudera Issue: OPSAPS-48170

Support GPU Scheduling and Isolation for YARN

Added support to enable usage of GPUs in YARN applications and for custom YARN resource types.

Cloudera Issue: OPSAPS-48685

Health Test for Erasure Coding Policies

A new **Verify Erasure Coding Policies For Cluster Topology** health test has been introduced. The health test fails with a yellow status if there are not enough data nodes or racks to support all enabled erasure coding policies.

Cloudera Issue: OPSAPS-48526

Disk Caching Configurations in Spark Service

Disk caching for the Spark History Server can now be enabled from Cloudera Manager.

Cloudera Issue: OPSAPS-48385

Decimal Support for Sqoop Clients

Sqoop decimal support for Parquet and Avro imports will now be turned on by default for new CDH 6.2 (or higher) clusters. In the case of a newly upgraded cluster, decimal support must be enabled manually.

- Setting the following property to enable decimal support in Avro:
`sqoop.avro.logical_types.decimal.enable=true`
- Setting the following properties to enable decimal support in Parquet:

```
sqoop.parquet.logical_types.decimal.enable=true
parquetjob.configurator.implementation=hadoop
```

Please note that changing any of these properties might break existing Sqoop jobs, or alter their output in a way that disrupts consumers further down the chain.

Cloudera Issue: OPSAPS-48938

TLS

Apply Auto-TLS Configuration to Existing Services

You can now use Auto-TLS to add TLS to an existing cluster. This functionality is available in both the Cloudera Manager Admin Console and by using the API. See [Configuring TLS Encryption for Cloudera Manager and CDH Using Auto-TLS](#),

There is a new cluster Cloudera Manager API command `ConfigureAutoTlsServices` which will enable Auto-TLS for services in a single cluster. Please refer to the [Cloudera Manager REST API documentation](#) for more information.

Cloudera Issue: OPSAPS-47349

HTTP Strict Transport Security

When TLS is enabled for the Cloudera Manager Admin Console web requests now include the HTTP Strict-Transport-Security header. For more details about this header, see [Strict-Transport-Security \(Mozilla\)](#).

Cloudera Issue: OPSAPS-282290

Support for TLS proto/ciphers in Custom Service Descriptors (CSD)

Added the ability to specify the TLS protocol and the TLS cipher suites in CSDs.

Cloudera Issue: OPSAPS-48214

Expose the configurations to use TLS encryption to the Hive Metastore Database on the Hive Metastore (Hive) Configurations Page

Exposes properties that can be used to configure TLS from the Hive Metastore Server to the Hive Metastore Database. As a minimum configuration requirement, the **Enable TLS/SSL to the Hive Metastore Database** checkbox must be enabled. (The default value is disabled.) If the **Hive Metastore TLS/SSL Client Truststore** properties are provided, then those will be used. Otherwise, the default list of well-known certificate authorities will be used. Additionally, ability to provide a JDBC URL override to use when connecting to the database is also exposed. This will override all other values used to create the JDBC URL. This is an advanced configuration option and should only be used as a safety-valve.

Cloudera Issue: OPSAPS-48666

Enable Auto-TLS Globally

There is now a Cloudera Manager API command, `GenerateCmcaCommand`, which will enable Auto-TLS for an existing Cloudera Manager deployment. This command creates an internal Cloudera Manager Certificate Authority (CMCA) and certificates for all existing hosts. Please refer to the [Cloudera Manager REST API documentation](#) for more information.

Cloudera Issue: OPSAPS-43102

Kafka/Flume Auto-TLS enhancements

Flume now supports Auto-TLS when used with Kafka.

Cloudera Issue: OPSAPS-46339

License Enforcement - Auto TLS

Auto-TLS is not available when using a Trial license. To enable Auto-TLS, you must have an Enterprise license.

Cloudera Issue: OPSAPS-48981

Custom certificates for Cloudera Manager Certificate Authority (CMCA)

When using Auto-TLS with custom certificates, you can use the new `AddCustomCerts` command to add certificates associated with a hostname to the Auto-TLS certificate database. Please refer to the [Cloudera Manager REST API documentation](#) for more information. details.

Cloudera Issue: OPSAPS-48678

Fixed Issues in Cloudera Manager 6.2.0

The following sections describes issue fixed in Cloudera Manager 6.2.0:

Default thresholds for swap warnings are too low

The default process swap size warning threshold has been increased from 0 to 200Mb. A new host level configuration property, **Default Process Swap Memory Thresholds**, has been added for process swap size alert thresholds. This allows for bulk updates of process level alerts that use the default settings.

Cloudera Bug: OPSAPS-44904

Service name auto-generation code is broken, causing a constraint violation

Fixed an issue where Cloudera Manager incorrectly auto-generated the Service Display Name when adding services.

Cloudera Bug: OPSAPS-48672

Hive replication does not copy an empty database

Empty databases without metadata or Hive/Impala UDFs are now replicated during Hive replication.

Cloudera Bug: OPSAPS-47224

Cluster template import causes state corruption

Fixed an issue with importing Cluster Templates. When hosts that are used in another cluster are, by mistake, specified in the template, then these hosts are dissociated with their cluster and the cluster is left in an invalid state and beyond repair.

Cloudera Bug: OPSAPS-48680

Summary and full views in the Replication API display the same result

Fixed an issue where using the Cloudera Manager API to return a summary view for a replication job returns a summary with limited information instead of the full view.

Cloudera Bug: OPSAPS-47182

Setting displayName in cluster template does not impact display name

Fixed an issue where setting the display name for a service using a cluster template did not change the service name.

Cloudera Bug: OPSAPS-46056

Server fails to contact agent when TLS is on

Fixed an issue with TLS encryption. When TLS encryption is enabled for agent-server communication, but no key and certificate is configured for an agent host, then the agent might erroneously report that it is serving the agent status server (port 9000) over HTTPS when it is not. This caused failures during diagnostic bundle collection.

To configure the agent status server to use HTTPS, configure the agent with a `client_cert_file` and `client_key_file` in the `/etc/cloudera-scm-agent/config.ini` file.

Cloudera Bug: OPSAPS-48958

Host inspector incorrectly reports bad version of PSYCOPG2

Fixed an issue where the Host Inspector may incorrectly report that an incompatible version of PSYCOPG2 was in use.

Cloudera Bug: OPSAPS-48649

Diagnostic bundle has zero-length agent log .zip files

Fixed an issue where zero-length agent log .zip files were included in diagnostic bundles.

Cloudera Bug: OPSAPS-49208

Import/Export cluster deployment through API for inbuilt/custom roles

Fixed an issue where using the Cloudera Manager API to import and export deployments failed when using custom roles.

Cloudera Bug: OPSAPS-48104

Cannot negotiate TLS to Cloudera Manager Admin Console on OpenJDK 1.8 on Centos 7.2

Fixed an issue where older versions of OpenJDK may not implement certain TLS ciphers, causing an inability to log into the Cloudera Manager Admin Console when TLS is enabled. Either upgrade the version of OpenJDK, or allow Cloudera Manager to use less secure ciphers by editing `/etc/default/cloudera-scm-server` and uncommenting the line that contains `"export CMF_OVERRIDE_TLS_CIPHERS="`.

Cloudera Bug: OPSAPS-49578

YARN jobs failure when using encrypted shuffle

On some operating systems, the default file mask may cause the Auto-TLS truststore file to not be world-readable, causing YARN jobs to fail when encrypted shuffle is enabled. This issue has been fixed.

Cloudera Bug: OPSAPS-48731

Uploading a valid license via the Cloudera Manager API Swagger client returns 500 Server Error

Fixed the `update_license()` method in `ClouderaManagerResourceApi` in the Cloudera Manager Python Swagger-based API client that allows updating the license file for Cloudera Manager. Without the fix, the `update_license()` method fails with the following error: "No multipart with content id license found" HTTP error 500.

Cloudera Bug: OPSAPS-49116

Syntax highlighting for Java API client docs is broken

Fixed an issue with syntax highlighting for the Cloudera Manager Java API client SDK documentation.

Cloudera Bug: OPSAPS-49406

Disable Hive > Actions > Update Hive Metastore NameNodes if high availability is not enabled for HDFS

Fixed an issue where re-running the Update Hive Metastore NameNodes Command when HDFS High Availability was disabled corrupted the URI paths in Hive tables by appending an additional port number.

Cloudera Bug: OPSAPS-46970

Cloudera Navigator Limitation when using Virtual Private Clusters

Navigator does not capture auditing and lineage information from Compute clusters in version 6.2.0.

Cloudera Bug: OPSAPS-48694

Upgrade CDH screen does not list all the databases that need to be backed up

When you run the Upgrade Cluster wizard to upgrade from CDH 6.1 to 6.2, Hive now appears in the list of databases to be backed up.

Cloudera Bug: OPSAPS-49314

dfs.client.read.shortcircuit needs to be set correctly for each Impala instance

When Impala daemons are not co-located with a DataNode, Advanced Configuration Snippets are no longer necessary to disable short circuit reads when using CDH 6.2 or higher.

Cloudera Bug: OPSAPS-46971

Maven dependency issue for jaxrs

Fixed an issue where some of the Cloudera Manager API endpoints stopped working in version 6.1.0.

Cloudera Bug: OPSAPS-49159

Java runtime error when setting static pool through Cloudera Manager

Fixed a RuntimeException that occurs when configuring Static Pools in Cloudera Manager.

Cloudera Bug: OPSAPS-48476

Snapshot Policies screen hangs

Fixed an issue where the Snapshots Policies screen in the Cloudera Manager Admin Console hangs when there are scheduled replications with snapshots.

Cloudera Bug: OPSAPS-49511

Make sure Spark app log collection works with authentication on

Fixed several issues with the YARN diagnostic bundle, which could not collect Spark event logs when SSL or Kerberos authentication was enabled for the Spark History Server.

Cloudera Bug: OPSAPS-39280

New compile lock related configuration values to Cloudera Manager

The following HiveServer2 configuration parameters for compile locking have been added:

- hive.driver.parallel.compilation
- hive.driver.parallel.compilation.global.limit

Cloudera Bug: OPSAPS-47503

Add pre-upgrade confirmation box to HBase upgrade

Added two checkboxes to the HBase upgrade screen for validating co-processors and tables.

Cloudera Bug: OPSAPS-48815

Diagnostic bundle creation slows down Cloudera Managers

Fixed an issue where running a diagnostic bundle command slows down other commands running in Cloudera Manager.

Cloudera Bug: OPSAPS-49233

Broken Link on Replication History page

Fixed a broken link on the Replication History page to the respective YARN jobs.

Cloudera Bug: OPSAPS-29486

Incompatible Changes in Cloudera Manager 6.2

See below for incompatible changes in Cloudera Manager 6.2.0:

Default thresholds for swap warnings are too low

The default process swap size warning threshold has been increased from 0 to 200Mb. A new host level configuration property, **Default Process Swap Memory Thresholds**, has been added for process swap size alert thresholds. This allows for bulk updates of process level alerts that use the default settings.

Cloudera Bug: OPSAPS-44904

Known Issues and Limitations in Cloudera Manager 6.2.0

The following sections describe known issues and limitations for Cloudera Manager 6.2.0:

Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.5 and later
- Cloudera Manager 6.0 until 6.3.3
- Cloudera Manager 7.1.x

Users affected: Users with admin role in Cloudera Manager can impact end users of the service.

Impact: In production clusters this can result in a cluster-wide service outage; Already observed for the YARN service and the HDFS service in a few clusters.

Severity: High

Action required:

- A workaround exists where instead of performing a restart we recommend performing a stop/start of the services.
- Issue is fixed in CM-6.3.4, CM-7.2.1 and above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Cloudera Manager installation fails on MariaDB 10.2.8 and later

When installing Cloudera Manager using MariaDB 10.2.8 or later, the Cloudera Manager web server doesn't come up and the install process ends with a failed status. The `cloudera-scm-server.log` includes the following SQL error:

```
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: SQL Error at 'UTF-8' line
57:
"alter table ROLE_CONFIG_GROUPS
drop column REVISION_ID"
Key column 'REVISION_ID' doesn't exist in table
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: Rolling back SQL
transaction.
2019-08-28 04:37:10,172 ERROR main:com.cloudera.enterprise.dbutil.SqlFileRunner: Exception
while executing ddl scripts.
com.mysql.jdbc.exceptions.jdbc4.MySQLSyntaxErrorException: Key column 'REVISION_ID'
doesn't exist in table
```

Note that MariaDB 10.2.8 is provided by default in some operating systems, including SLES 12 SP4.

Workaround: Replace the default MariaDB 10.2.x version with MariaDB 10.2.7.

Affected Versions: MariaDB 10.2.8 and later

Cloudera Issue: OPSAPS-52340

Cloudera Manager 6.2.0 does not have the correct license notification

Cloudera Manager 6.2.0 contains the third-party license notification for a previous release. You can view the correct license notification file [here](#) or on the [Third-party License Page for Cloudera Manager](#).

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.

- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Limitations for Virtual Private Clusters

There are a number of limitations and considerations for running Virtual Private Clusters, including the types of services you can run on a Compute cluster and supported versions of CDH. See [Compatibility Considerations for Virtual Private Clusters](#).

Restart of Impala and Hive required for Cloudera Manager 6.2 upgrade with ADLS

After upgrading to Cloudera Manager 6.2 or higher, Impala and Hive will be marked as stale for users running CDH 6.1 and using the ADLS Service. You will need to restart Hive and Impala before being able to connect to ADLS Gen2, but all previous functionality will continue to work without a restart. The configurations that will be marked stale are:

- fs.azure.account.auth.type
- fs.azure.account.oauth.provider.type
- fs.azure.account.oauth2.client.endpoint
- fs.azure.account.oauth2.client.id
- fs.azure.account.oauth2.client.secret.

Cloudera Bug: OPSAPS-47436

Add Hive Execution Service on Compute Cluster for Hue

To enable Hue to run Hive queries on a Compute cluster, you must install the **Hive Execution Service** on the Compute cluster.

Alternately, you can disable the Hive editor in Hue to prevent users from using it (it will not work correctly) by doing the following:

1. In the Cloudera Manager Admin console, go to the Hue service on the Compute cluster.
2. Open the **Hue Web UI**.
3. Select **Admin > Manage Users**.
4. Select the **Group** tab.
5. Click on the row containing the **default** group.
6. De-select the **beeswax.access:Launch this application** permission.
7. Click **Update Group**.

Cloudera Bug: DOCS-4438 OPSAPS-49062

BDR invalidate metadata command

When running a Hive replication job, the **invalidate metadata** command is run automatically by the replication job and runs as the **impala** user. If an administrator has configured a different user with permissions to run the **invalidate metadata** command, the command fails.

Workaround: Grant the Impala user permission to run the **invalidate metadata** command.

Cloudera Bug: OPSAPS-44327

TLS Protocol Error with OpenJDK

If you are using an older version of OpenJDK 1.8 and have enabled SSL/TLS for the Cloudera Manager Admin Console, you may encounter a TLS protocol error when connecting to the Admin Console, stating that there are no ciphers in

common. This is because older versions of OpenJDK may not implement certain TLS ciphers, causing an inability to log into the Cloudera Manager Admin Console when TLS is enabled.

Workaround:

You can workaround this issue by doing one of the following:

- Upgrade OpenJDK to a [supported version of OpenJDK](#) that is higher than version 1.8.0_181.
- If it is not possible to upgrade OpenJDK, enable less secure TLS ciphers in Cloudera Manager. You can do this by opening the `/etc/default/cloudera-scm-server` in a text editor and adding the following line:

```
export CMF_OVERRIDE_TLS_CIPHERS=<cipher_list>
```

Where `<cipher_list>` is a list of TLS cipher suites separated by colons. For example:

```
export
```

Cloudera Bug: OPSAPS-49578

Cloudera Manager 6.1.x Release Notes

To view release notes for specific Cloudera Manager 6.1.x releases, see the following:

Cloudera Manager 6.1.1 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.1.1:

New Features in Cloudera Manager 6.1.1

The following sections describe new and changed features for Cloudera Manager 6.1.1:

There are no new features in Cloudera Manager 6.1.1. See also [Known Issues and Limitations in Cloudera Manager 6.1.1](#) on page 334.

Fixed Issues in Cloudera Manager 6.1.1

The following sections describes issues fixed in Cloudera Manager 6.1.1:

Backup and disaster recovery (BDR) HDFS and Hive replications will fail on clusters running Cloudera Manager 6.1.0

This issue caused BDR HDFS and Hive replications to fail when you replicated from secured (Kerberized) source clusters to destination clusters that have been upgraded to Cloudera Manager 6.1.0.

This issue has been fixed in this release. After upgrade, the schedules will correctly identify the source as either a secure or unsecure cluster. In the case of multiple peers, one secure and another unsecure peer is supported.

Cloudera Issue: OPSAPS-48865

The Add Hosts link on the Cloudera Director page is broken in the public cloud scenario

When you add hosts to Cloudera Manager deployed in AWS, a page that describes Cloudera Director is displayed. There is a link to the classic Add Hosts wizard. This wizard was broken in version 6.0.0 and 6.0.1. This issue is fixed in this release.

Cloudera Issue: OPSAPS-48627

BDR fails if dfs.nameservices is overridden with multiple nameservice names

This fix:

1. Adds a feature flag that you can use to disable the replace nameservice feature by calling the following API call:

```
http://cm_host:cm_port/api/v19/cm/config
```

with the body:

```
{ "items": [ { "name": "feature_flag_bdr_replace_nameservice", "value": "false" } ] }
```

2. Handles the scenario for multiple nameservices in `dfs.nameservices` configuration. Now the feature cross-checks that with the `fs.defaultFS` configured in `core-site.xml`.

Cloudera Issue: OPSAPS-48579

The diff format is not displayed on the configuration revisions diff page

The delta between the old and the new configuration value was previously shown using a red background color to indicate removal, and a green color to indicate addition. This was not displaying correctly in Cloudera Manager 6.1.0. This issue is fixed in this release.

Cloudera Issue: OPSAPS-48544

Decommissioning a DataNode during a current decommission (in parallel) never completes

With this change, you can decommission DataNodes in parallel. They won't appear to be stuck as incomplete on the user interface.

Cloudera Issue: OPSAPS-39746

[Known Issues and Limitations in Cloudera Manager 6.1.1](#)

The following sections describe known issues and limitations for Cloudera Manager 6.1.1:

Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.5 and later
- Cloudera Manager 6.0 until 6.3.3
- Cloudera Manager 7.1.x

Users affected: Users with admin role in Cloudera Manager can impact end users of the service.

Impact: In production clusters this can result in a cluster-wide service outage; Already observed for the YARN service and the HDFS service in a few clusters.

Severity: High

Action required:

- A workaround exists where instead of performing a restart we recommend performing a stop/start of the services.
- Issue is fixed in CM-6.3.4, CM-7.2.1 and above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Cloudera Manager installation fails on MariaDB 10.2.8 and later

When installing Cloudera Manager using MariaDB 10.2.8 or later, the Cloudera Manager web server doesn't come up and the install process ends with a failed status. The `cloudera-scm-server.log` includes the following SQL error:

```
2019-08-28 04:37:10,171 FATAL main:org.hsquidb.cmdline.SqlFile: SQL Error at 'UTF-8' line 57:
"alter table ROLE_CONFIG_GROUPS
drop column REVISION_ID"
Key column 'REVISION_ID' doesn't exist in table
2019-08-28 04:37:10,171 FATAL main:org.hsquidb.cmdline.SqlFile: Rolling back SQL transaction.
```

```
2019-08-28 04:37:10,172 ERROR main:com.cloudera.enterprise.dbutil.SqlFileRunner: Exception
while executing ddl scripts.
com.mysql.jdbc.exceptions.jdbc4.MySQLSyntaxErrorException: Key column 'REVISION_ID'
doesn't exist in table
```

Note that MariaDB 10.2.8 is provided by default in some operating systems, including SLES 12 SP4.

Workaround: Replace the default MariaDB 10.2.x version with MariaDB 10.2.7.

Affected Versions: MariaDB 10.2.8 and later

Cloudera Issue: OPSAPS-52340

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Backup and Disaster Recovery (BDR) performance regression after upgrading to CDH 6.0.0

Hive replication with BDR experiences a performance regression when comparing CDH 6.0.0 and CDH 5.14.4. The slowdown occurs during the import step. For example, the performance regression may only be 10% for 4 million partitions. As the number of partitions goes down though, the performance impact becomes more visible. For example, 100,000 partitions may experience a 20% performance regression.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0; CDH 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-47520

Cloudera Manager allows more than a single space in YARN Admin ACLs

When adding a YARN Admin ACL in Cloudera Manager, you are allowed to enter multiple spaces in the entry. The space is the separator between the user and group lists, and only a single space should be allowed in the entry. All entries that appear after a second single space in a YARN Admin ACL will be ignored.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-47688

Integer data types map to Float in Swagger API client

Integer data types show up as floating point numbers when using the Cloudera Manager API Python client.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-45689

User Sessions page doesn't update with a newly logged in SAML user

If you log into Cloudera Manager as the administrator user, and then log into Cloudera Manager with a SAML user through a different browser, the SAML user does not appear on the **User Sessions** page.

Affected Versions: 6.0.0, 6.0.1

Cloudera Issue: OPSAPS-47025

Package Installation of CDH Fails

When you install CDH with packages from a custom repository, ensure that the version of CDH you select for **Select the version of CDH** matches the version of CDH for the custom repository. Selecting the CDH version and specifying a custom repository are done during the **Select Repository** stage of installation.

If the versions do not match, installation fails.

Affected Versions: Cloudera Manager 6.x

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: OPSAPS-45703

Cloudera Manager 6.1.0 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.1.0:

[New Features and Changes in Cloudera Manager 6.1.0](#)

The following sections describe new and changed features for Cloudera Manager 6.1.0:

Accumulo

Accumulo installations now use the Hadoop Credential Provider to handle sensitive properties. For example, the instance secret and trace user password.

Agents

The Cloudera Manager Admin console now displays a message if the agent is hearbeating with an invalid CM_GUID

API endpoints for Roles

For API documentation and the new Swagger-based API client, roles can be accessed from Roles Resource instead of Services Resource. This does not change the roles endpoint and does not impact those accessing the Cloudera Manager API endpoints directly using tools like curl.

Audit Events

Cloudera Manager logs events in the Audits database table when the API is accessed either from the Cloudera Manager Admin Console or from any other client. When the API is accessed at a rapid rate, the Audits database table grows rapidly, negatively impacting Cloudera Manager performance.

Cloudera Manager now collects similar audit events that occur during a configurable period into a unique audit entry in the Audits database table. This can prevent the Audits table from being filled at a rapid rate. This feature can be configured by setting arguments to **CMF_JAVA_OPTS** in **cloudera-scm-server.properties**:

- **com.cloudera.cmf.persist.cmAuditTrackerConfig.timeToLiveMs** : Period during which similar audit entries will be coalesced into one. Default is 10000 milliseconds. Setting this value to 0 disables this feature entirely
- **com.cloudera.cmf.persist.cmEventCoalescer.maxTrackedEvents**: Number of maximum events that can be candidates for coalescing in a certain period. Default is 1024. If this limit is reached, then the oldest event is removed.

Auto-TLS

Certificate Handling

The **certmanager** can now use the following option to automatically skip invalid certificates and import the rest of the bundle: `--skip-invalid-ca-certs`. Previously, if one or more of the certificates in a bundle were invalid, then the entire setup operation failed.

Randomization of Sequential Certificate Authority Serial Numbers

Previously, certificates generated by Auto-TLS always started at serial number 0. Now, certificates will start from a random serial number. This affects only new deployments using Auto-TLS. Existing deployments using Auto-TLS are unaffected.

Supported Services

Auto-TLS now supports the following services: Flume, Java Keystore KMS, KeyTrustee server, KeyTrustee KMS, Thales HSM KMS, and Luna HSM KMS. When adding these services while Auto-TLS is enabled, TLS configuration will be added automatically.

Backup and Disaster Recovery (BDR)

Insecure Cluster to Secure Cluster Replication

You can now use BDR to replicate data from an insecure cluster that does not use Kerberos authentication, to a secure cluster that uses Kerberos. Note that the reverse is not true. BDR does not support replicating from a secure cluster to an insecure cluster.

To perform the replication, the destination cluster must be managed by Cloudera Manager 6.1.0 or higher. The source cluster must run Cloudera Manager 5.14.0 or higher in order to replicate to Cloudera Manager 6.

For more information, see [Replicating from Insecure to Secure Clusters](#) for Hive or [Replicating from Insecure to Secure Clusters](#) for HDFS.

Invalidate Metadata

BDR enhanced the **Invalidate Metadata** option so that the command is issued per Impala service after replication. This ensures that if a cluster has multiple Impala services, only the target Impala's metadata cache will be invalidated and require refresh, which can impact performance.

Kudu

BDR now ignores Hive tables backed by Kudu during replication. The change does not affect functionality since BDR does not support replicating Kudu tables. This change was made to guard against data loss due to how the Hive Metastore, Impala, and Kudu interact.

Log Retention

Previously, Cloudera Manager retained logs for BDR Replication jobs indefinitely. Now, Cloudera Manager retains BDR logs for 90 days by default. You can now change the number of days Cloudera Manager retains logs for or disable log retention completely with the **Backup and Disaster Log Retention** property of the HDFS Service.

Faster Incremental Replication using HDFS Snapshot-diff Report

This feature compares two HDFS snapshots to reduce the number of files scanned during the copy-listing phase of replication to only those files that have known changes between runs. This can speed up replication performance dramatically when large number of files are unchanged between replications.

This feature relies on the immutable snapshot feature of HDFS. This feature existed in prior releases of CDH, it is now on by default in 6.1. You can also configure replication jobs to abort on snapshot diff failure when you create or edit a replication schedule. This can happen if files that are in the scope of replication have been added, changed or deleted on the destination cluster, which is generally unsupported by BDR. However, BDR will fall back to an exhaustive comparison of files, and you can use various options for conflict resolution in this case, such as "delete policy".

See the following pages for guidelines on using snapshot diff-based replication: [Hive Guidelines](#) and [HDFS Guidelines](#).

PostgreSQL 10 Support

Added support for PostgreSQL version 10 for databases Cloudera Manager uses to store configuration, monitoring, and reporting data and for managed services that require a database.

Cloudera Express License Enforcement

A Cloudera Express license is only valid when less than 100 hosts are used across an organization.

Note the following:

- Cloudera Manager will not allow you to add hosts to a CDH 6.x cluster if the total number of hosts across all CDH 6.x clusters will exceed 100.
- Cloudera Manager will not allow you to upgrade any cluster to CDH 6.x if the total number of managed CDH6.x cluster hosts will exceed 100. If an upgrade from Cloudera Manager 6.0 to 6.1 fails due to this limitation, you must downgrade Cloudera Manager to version 6.0, remove some hosts so that the number of hosts is less than 100, then retry the upgrade.



Note: If you downgrade from Cloudera Enterprise to Cloudera Express and the number of managed hosts exceeds 100, Cloudera Manager will disable all cluster management commands except for commands used to stop a cluster. You will not be able to restart or otherwise use clusters while the total number of hosts exceeds 100. Use the Cloudera Manager Admin Console to remove some hosts so that the number of hosts is less than 100.

Affected Versions: Cloudera Manager 6.1 and higher

Diagnostic Bundles

The diagnostic bundle has been improved in the following ways:

- The `amesg` host command output collected as part of diagnostic bundles now includes formatted timestamps, if the host operating system supports it.
- Diagnostic bundles now capture information about all network interfaces on each host, regardless of name.

HBase CDH 5 to CDH 6 upgrade checks for hbase prefix_tree_encoding

Added an upgrade check for upgrades from CDH 5 to CDH 6 that checks whether HBase tables are using PREFIX_TREE_ENCODING and warns the user.

Cloudera Bug: OPSAPS-44701

HDFS

You can now configure `nfs.export.point` as part of the HDFS configurations for NFSGateway.

Hive

Size of Hive query locks in ZooKeeper

When taking locks on a table, Hive creates a Zookeeper object for each such lock which contains the full query string. This query string is only used to display locks with `SHOW LOCKS EXTENDED` command. It has no impact on the actual locking process.

However, this often created huge memory pressure on the ZooKeeper instance. For example, for a query string of 1MB in size, if the locks are acquired on 10000 partitions of a table, then this requires 10GB of memory on ZooKeeper. To alleviate this pressure, the maximum query length stored in ZooKeeper lock object has been limited to 10000 characters by default via `hive.locks.query.string.max.length` property. To reiterate, this does not affect any behavior except for how queries are displayed in the output of the `SHOW LOCKS EXTENDED` command. This configuration value can be increased to a maximum of 1 million, which is the data limit of a znode (1 MB).

Hive Metastore Connection Retries

A new configuration parameter, `hive.metastore.connect.retries`, has been added for HiveServer2 with an increased default value.

Hue

For RedHat7 and compatible platforms, if Hue uses Postgres (including the Cloudera Manager embedded database for proof-of-concept installations), the appropriate version of **psycopg2** will be automatically installed by Cloudera Manager.

Hue Logs

Cloudera Manager can now parse httpd log files, including those used by Hue, meaning they will be included in diagnostic bundles, log search, and visible for browsing in the Cloudera Manager UI.

Impala

New Impala configuration parameters for idle query timeout and idle session timeout

Cloudera Manager now supports configuring the Impala `idle_query_timeout` and `idle_session_timeout` parameters.

New Impala daemon configuration property for JVM heap size

A new Impala Daemon configuration parameter, **Java Heap Size of Impala Daemon in Bytes** has been added to configure the JVM heap size. It defaults to 4 GB, and, like all memory parameters, may require tuning.

Impalad JVM usage plots are now on the Impala Daemon's role status page

Impala Daemon's JVM Heap Usage plots are now available on the Impala Daemon's Status page on the Cloudera Manager Admin Console.

Cloudera Bug: OPSAPS-47832

Impala Metrics

Impala exposes additional metrics about the JVM and GC now. GC metric charts for the Impala Daemon's embedded JVM will now be seen on the Impala Daemon's role status page in the **Cloudera Manager Admin Console**.

Impala Health Checks

Added two new health checks:

- JVM pause time
- Maximum capacity for concurrent client connections for the Impala Daemon. You can configure this health check with the **Impala Daemon Max Client Connections** parameter.

Impala Chart Library

The Impala predefined charts have been updated to include more meaningful metrics and remove rarely used plots.

Impala Resource Pools

Impala resource pools now contain minimum/maximum allowed memory limit (`MEM_LIMIT`) values for queries submitted to a particular pool. This change also adds validations for those attributes. For more information about these attributes, see [IMPALA-7349](#).

Intel's MKL Repository

The Intel Math Kernel Library (MKL) parcel is now included in the default parcel repositories starting in Cloudera Manager 6.1. This parcel can accelerate certain machine learning workloads. The parcel is available, but not downloaded or activated on clusters by default. Read more about it here:

<https://software.intel.com/en-us/articles/installing-intel-mkl-cloudera-cdh-parcel>

Kafka

Kafka Data Retention Parameter

The Kafka Broker parameter **Data Retention Hours** (`data.retention.hours`) was removed from the **Cloudera Manager Admin Console**. Use the **Data Retention Time** (`data.retention.ms`) parameter instead.

Kafka Broker Network Threads Parameter

A new configuration property, `num.network.threads` has been added to the Kafka broker configuration parameters. The default value is based on the upstream version.

Kafka Broker Performance Defaults

For CDH 6.1 and higher installations, default values for the following configuration parameters of the Kafka service have been changed based on production recommendations: `-num.replica.fetchers=4` and `num.network.threads=8`

Kafka Metrics

The following metrics have been added for BrokerTopic:

- `kafka_fetch_message_conversions_per_sec`
- `kafka_produce_message_conversions_per_sec`
- `kafka_replication_bytes_in_per_sec`
- `kafka_replication_bytes_out_per_sec`
- `kafka_total_fetch_requests_per_sec`
- `kafka_total_produce_requests_per_sec`

The following metrics have been added for the Controller:

- `kafka_auto_leader_balance_rate_and_time_ms`
- `kafka_controlled_shutdown_rate_and_time_ms`
- `kafka_controller_change_rate_and_time_ms`
- `kafka_isr_change_rate_and_time_ms`
- `kafka_leader_and_isr_response_received_rate_and_time_ms`
- `kafka_log_dir_change_rate_and_time_ms`
- `kafka_manual_leader_balance_rate_and_time_ms`
- `kafka_partition_reassignment_rate_and_time_ms`
- `kafka_topic_change_rate_and_time_ms`
- `kafka_topic_deletion_rate_and_time_ms`
- `kafka_controller_state`
- `kafka_global_partition_count`
- `kafka_global_topic_count`

The following metrics have been added for the ReplicaManager:

- `kafka_failed_isr_updates`
- `kafka_offline_replica_count`
- `kafka_under_min_isr_partition_count`

The following metrics have been added for the LogCleaner:

- `kafka_logcleaner_cleaner_recopy_percent`
- `kafka_logcleaner_max_buffer_utilization_percent`
- `kafka_logcleaner_max_clean_time_secs`
- `kafka_logcleaner_max_dirty_percent`
- `kafka_logcleaner_time_since_last_run_ms`
- `kafka_logcleaner_offline_log_directory_count`

Kafka Shutdown and Recovery

The graceful stop timeout of the Kafka service has been increased to 120 seconds, and a new configuration property, `num.recovery.threads.per.data.dir` has been added.

JBOD-related metrics

New metrics have been added that show the number of offline log directories and offline partitions in Kafka

Improved Redaction of Kerberos Credentials

Enhanced the behavior of the Import KDC Account Manager Credentials command. If the command fails, the currently configured redaction policy is now applied to the command's error output. User names and passwords are always redacted from the output.

New cluster Metrics for Cloud storage

The amount of data read and written through S3 and Azure Data Lake storage by MapReduce jobs can now be viewed as cluster metrics. For example: `s3a_bytes_read` and `adl_bytes_written`.

Cloudera Bug: OPSAPS-44748

Network Performance Inspector

The **Network Performance Inspector** allows you to examine the latency among the hosts managed by Cloudera Manager. You can use this tool to diagnose latency issues that can significantly affect the performance of workloads such as MapReduce jobs, Spark jobs, and Hive and Impala queries, particularly when using remote storage.

The inspector runs ping commands from each host to all other hosts, and reports the average ping time and packet loss percentage. You can use this information to identify problematic hosts or networking infrastructure issues so that you take corrective action. You can run the inspector on-demand, and it also available when adding a new cluster. You can also run the inspector using the Cloudera Manager API.

See [Inspecting Network Performance](#)

OpenJDK

OpenJDK is now supported for Cloudera Manager and CDH 6.1 and higher.

For more information, see [Java Requirements](#) on page 27 and [Manually Migrating to OpenJDK](#).

Sentry

- A new Sentry configuration has been added to the SENTRY configuration. This enables Sentry OWNER privileges and is disabled by default.
- A new Sentry configuration for OWNER Privileges is added with ALL_WITH_GRANT as the default

YARN Fair Scheduler Properties

Two existing YARN configuration parameters have now been exposed in Cloudera Manager. Fair Scheduler Dynamic Max Assign has been added, which allows the ResourceManager to allocate up to half the available resources on a node during node heartbeat, as long as the Fair Scheduler Assign Multiple Tasks setting is true. The default value is true. Also, the Fair Scheduler Max Assign property has also been added, which **sets** the number of containers allocated by the ResourceManager with each node heartbeat, as long as Fair Scheduler Assign Multiple Tasks is true and Fair Scheduler Dynamic Max Assign is false. The default value is -1 which is equivalent to unlimited. These changes should not have any effect on YARN behavior as they are just being shown in Cloudera Manager and the default values are unchanged.

System User Group Membership

The Host inspector will now display a warning if various Linux system users (e.g. 'yarn', 'hdfs', 'hue', 'sentry') are not members of a group of the same name, which is required, particularly when Kerberos authentication is enabled. For more information, see [Hadoop Users \(user:group\) and Kerberos Principals](#).

TLS

You can now set the TLS cipher suites for Hadoop with the `ssl.server.exclude.cipher.list` property.

ZooKeeper

Enable Kerberos Authentication and **Enable Server to Server SASL Authentication** settings in ZooKeeper have been linked together since both should be either turned on or off. If either is switched on or off, the other automatically follows.

This change automates steps that were manually required to address CVE-2018-8012 .

Fixed Issues in Cloudera Manager 6.1.0

The following sections describes issue fixed in Cloudera Manager 6.1.0:

ZooKeeper JMX did not support TLS when managed by Cloudera Manager

Technical Service Bulletin 2019-310 (TSB)

The ZooKeeper service optionally exposes a JMX port used for reporting and metrics. By default, Cloudera Manager enables this port, but prior to Cloudera Manager 6.1.0, it did not support mutual TLS authentication on this connection. While JMX has a password-based authentication mechanism that Cloudera Manager enables by default, weaknesses have been found in the authentication mechanism, and Oracle now advises JMX connections to enable mutual TLS authentication in addition to password-based authentication. A successful attack may leak data, cause denial of service, or even allow arbitrary code execution on the Java process that exposes a JMX port. Beginning in Cloudera Manager 6.1.0, it is possible to configure mutual TLS authentication on ZooKeeper's JMX port.

Products affected: ZooKeeper

Releases affected: Cloudera Manager 6.1.0 and lower, Cloudera Manager 5.16 and lower

Users affected: All

Date/time of detection: June 7, 2018

Severity (Low/Medium/High): 9.8 High ([CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H](#))

Impact: Remote code execution

CVE: CVE-2018-11744

Immediate action required: Upgrade to Cloudera Manager 6.1.0 and enable TLS for the ZooKeeper JMX port by turning on the configuration settings “Enable TLS/SSL for ZooKeeper JMX” and “Enable TLS client authentication for JMX port” on the ZooKeeper service and configuring the appropriate TLS settings. Alternatively, disable the ZooKeeper JMX port via the configuration setting “Enable JMX Agent” on the ZooKeeper service.



Note: Disabling the ZooKeeper JMX port prevents Cloudera Manager from performing health checks on the ZooKeeper service.

Addressed in release/refresh/patch: Cloudera Manager 6.1.0

Upgrade fails during checkJavaComponent (DbHostHeartbeat.java:177)

Fixed an issue with Java version parsing during Cloudera Manager upgrade.

Cloudera Issue: OPSAPS-47620

CDH 6 upgrade validator fails when no Sentry service is available

Fixed an issue where a CDH 5 cluster with a Keystore Indexer without a Sentry service. When attempting to upgrade to CDH 6 an empty error message displays. Note that when Sentry Policy File is enabled, users must either disable it or add a Sentry service, so that the policy file can be migrated automatically.

Cloudera Issue: OPSAPS-47617

creds.localjceks marked stale with an empty diff

Fixed an issue where `creds.localjceks`, the encrypted keystore used for the Hadoop Credentials provider, might be shown under the list of stale configuration files, but the contents did not actually change. When a role instance is shown as stale and its files include `creds.localjceks`, then this file will also be marked stale. This fix eliminates false reports of staleness.

Cloudera Issue: OPSAPS-47511

Search upgrade reinitialize does not use config for hdfs command

Fixed an issue where on CDH upgrade, Solr index files were not getting deleted from HDFS. This caused Solr to fail to start since files had an old index scheme.

Cloudera Issue: OPSAPS-47502*Export cluster template API returns failure*

Fixed the cluster template export failure when the Hue configuration HDFS Web Interface Role (`webhdfs_url`) is using or pointing to the https load balancer rather than to an HDFS role.

Cloudera Issue: OPSAPS-47060*Kafka should use the Garbage first garbage collector by default*

Fixed an issue where Kafka broker and MirrorMaker processes did not use the Garbage-First (G1) garbage collector.

Cloudera Issue: OPSAPS-45956*Externally authenticated users cannot view their roles or previous session*

Fixed a display issue where a user could not see their assigned roles and most recent successful login by navigating to **<Username> > My Profile** in the **Cloudera Manager Admin Console**. This issue did not affect functionality.

Cloudera Issue: OPSAPS-46996, OPSAPS-47025*Cloudera Manager not detecting available physical memory correctly*

Fixed an issue with incorrect reporting of used physical memory on host nodes with a significant amount of Shared Memory in use. Cloudera Manager now takes usage of Shared Memory into account when reporting the physical memory used on a host node.

Cloudera Issue: OPSAPS-47396*HDFS_CLIENT_CONFIG_JAVA_OPTS has hbase in the template name*

Changed the API name to fix the wrong name in the parameter.

| Old Name | New Name |
|------------------------|-----------------------|
| hbase_client_java_opts | hdfs_client_java_opts |

This parameter configures the Client Java Configuration Options found under the HDFS Gateway role configuration. Any API scripts or cluster templates referencing these old names need to be updated to use the new names.

Cloudera Issue: OPSAPS-24569*Fix typos in a "detecton_window" API names*

Changed the API names to fix typos in the following parameters:

| Old Name | New Name |
|---|--|
| hbase_active_master_detecton_window | hbase_active_master_detection_window |
| hdfs_active_namenode_detecton_window | hdfs_active_namenode_detection_window |
| mapreduce_active_jobtracker_detecton_window | mapreduce_active_jobtracker_detection_window |
| yarn_active_resourcemanager_detecton_window | yarn_active_resourcemanager_detection_window |

These parameters tune the behavior of health test checking. The affected entities are: HBase Master, HDFS NameNode, MapReduce JobTracker, YARN ResourceManager. Any API scripts or cluster templates referencing these old names need to be updated to use the new names.

Cloudera Issue: OPSAPS-39223*CDH 6 Spark CSD does not support Auto-TLS*

Fixed an issue where Auto-TLS settings were not applied to the Spark service when Auto-TLS was enabled.

Cloudera Issue: OPSAPS-47925

Impala shell does not display the port number

Fixed an issue where the Impala shell command in the Cloudera Manager Admin Console was missing the port number required to connect to the Impala shell.

Cloudera Issue: OPSAPS-47589

Enable ZooKeeper fix for CVE-2018-8012

Enable Kerberos Authentication and **Enable Server to Server SASL Authentication** settings in ZooKeeper have been linked together since both should be either turned on or off. If either is switched on or off, the other automatically follows.

This change automates steps that address CVE-2018-8012. Previously, the solution required manual steps.

Cloudera Issue: OPSAPS-46628

Combine audit entries

Fixed an issue that occurs when the API is accessed at a rapid rate. This can cause the Audits database table to grow rapidly, negatively impacting Cloudera Manager performance.

Cloudera Manager logs events in the Audits database table when the API is accessed either from the Admin Console or from any other client. You can now configure a time period during which similar events are combined into one log entry. For more information, see [Audit Events](#) on page 336.

Cloudera Issue: OPSAPS-46898

CMF_SERVER_ARGS if given a configuration file results in staleness for Cloudera Manager

Fixed an issue where applying a configuration change with CMF_SERVER_ARGS arguments (using the `/etc/default/cloudera-scm-server` configuration file) led to a staleness warning after a Cloudera Manager server restart.

Cloudera Issue: OPSAPS-47240

Kudu package missing from libs/common/src/main/java/com/cloudera/cm/CDHResources

Fixes an issue where Cloudera Manager did not install Kudu packages when CDH was installed with packages instead of parcels.

Cloudera Issue: OPSAPS-45692

Restart warnings are incorrect after starting role with outdated configuration

Fixed an issue where some roles that required restarts were not correctly identified after starting a role marked as **Started with Outdated Configuration**.

Cloudera Issue: OPSAPS-45237

Typo in HiveServer2 load balancer API name

Fixed typos in the following parameter. This change affects Hive services when Hive Server 2 is configured for High Availability.

Table 32: API Names

| Old Name | New Name |
|----------------------------|---------------------------|
| hiverserver2_load_balancer | hiveserver2_load_balancer |

Any API scripts or cluster templates referencing these old names will need to be updated to use the new names.

Cloudera Issue: OPSAPS-33266

Traceback seen in ImpalaRoleDiagnosticsCollection and HBaseRoleDiagnosticsCollectionprocess

Fixed an issue that caused an exception to occur in the Cloudera Manager Agent during diagnostic bundle collection if the process had exited previously.

Cloudera Issue: OPSAPS-47354

Fix kafka_network_processor_avg_idle metric

Fixed an issue where the `kafka_network_processor_avg_idle` metric shows **NO DATA**.

Cloudera Issue: OPSAPS-45816

Sentry fails on first run, due to a pending command

When starting Sentry for the first time after the service was added, the "Creating Sentry Database Tables" step in the Start Service command may fail with the error: "There is already a pending command on this entity". This issue has been fixed and starting Sentry for the first time after the service was added no longer fails due to a pending command.

Cloudera Issue: OPSAPS-48426

HDFS Canary with HA nameservice in a non-federated cluster fails

The HDFS canary no longer erroneously reports UNKNOWN health status.

Cloudera Issue: OPSAPS-48337

Server and Daemon RPM installation scripts do not work well with Puppet installs

If you have installed the JDK at a non-standard location, set the `JAVA_HOME` environment variable before installing Cloudera Manager. If you cannot set `JAVA_HOME` in your environment, create an empty file with the path `/etc/cloudera-pre-install/CLOUDERA_SKIP_JAVA_INSTALL_CHECK` to skip any Java checks during package installation of Cloudera Manager Server and Daemon packages.

Cloudera Issue: OPSAPS-47908

Cannot stop Kafka broker

Fixed an Issue where the Kafka Broker could not be stopped if **Automatically Restart Process** is enabled. Because of a misconfiguration in process monitoring, the Cloudera Manager Agent would also restart the process when a legitimate stop was requested. Additionally, without automatic restarts, once the process was stopped, the health check for **Unexpected Exits** would eventually show the process in bad health. Note that this bug affected all CSD-based services where a graceful stop behavior was enabled at the role-level.

Cloudera Issue: OPSAPS-45029

Database connection error.

Fixed a database connection leak issue that caused the following error: `java.lang.IllegalStateException: currentCmfEntityManager already in transaction.`

Cloudera Issue: OPSAPS-45829

CSD role creation logic fixed for second instance of service

Fixes the automatic role creation logic when adding a second instance of a service. Adding a second instance of a service could result in extra roles being generated for the first instance of a service.

Cloudera Issue: OPSAPS-47766

Agent should download key bundles when behind proxy (plain HTTP)

Even if a proxy server was configured for Cloudera Manager, it was not used to download the package signing key during host installs, leading to installation failures. This has been fixed so that downloading the package signing key will use the configured proxy, but only if it is a plain HTTP proxy. Proxies requiring authentication or HTTPS are not currently supported. As a workaround, you can mirror the package repository locally to avoid needing a proxy.

Cloudera Issue: OPSAPS-47830

Incompatible Changes in Cloudera Manager 6.1

See below for incompatible changes in Cloudera Manager 6.1.0:

API Name Changes

HDFS_CLIENT_CONFIG_JAVA_OPTS has hbase in the template name

Changed the API name to fix the wrong name in the parameter.

| Old Name | New Name |
|------------------------|-----------------------|
| hbase_client_java_opts | hdfs_client_java_opts |

This parameter configures the Client Java Configuration Options found under the HDFS Gateway role configuration. Any API scripts or cluster templates referencing these old names need to be updated to use the new names.

Cloudera Issue: OPSAPS-24569

Fix typos in a "detecton_window" API names

Changed the API names to fix typos in the following parameters:

| Old Name | New Name |
|---|--|
| hbase_active_master_detecton_window | hbase_active_master_detection_window |
| hdfs_active_namenode_detecton_window | hdfs_active_namenode_detection_window |
| mapreduce_active_jobtracker_detecton_window | mapreduce_active_jobtracker_detection_window |
| yarn_active_resourceanager_detecton_window | yarn_active_resourceanager_detection_window |

These parameters tune the behavior of health test checking. The affected entities are: HBase Master, HDFS NameNode, MapReduce JobTracker, YARN ResourceManager. Any API scripts or cluster templates referencing these old names need to be updated to use the new names.

Cloudera Issue: OPSAPS-39223

Roles-related Cloudera Manager API endpoints are now accessed using RolesResource

For API documentation and the new, Swagger-based API client, roles can be accessed from Roles Resource instead of Services Resource. This does not change the roles endpoint and does not impact those accessing the Cloudera Manager API endpoints directly using tools like curl.

Cloudera Bug: OPSAPS-47787

Typo in HiveServer2 load balancer API name

Fixed typos in the following parameter. This change affects Hive services when Hive Server 2 is configured for High Availability.

Table 33: API Names

| Old Name | New Name |
|----------------------------|---------------------------|
| hiverserver2_load_balancer | hiveserver2_load_balancer |

Any API scripts or cluster templates referencing these old names will need to be updated to use the new names.

Cloudera Issue: OPSAPS-33266

Known Issues and Limitations in Cloudera Manager 6.1.0

The following sections describe known issues and limitations for Cloudera Manager 6.1.0:

Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.5 and later
- Cloudera Manager 6.0 until 6.3.3
- Cloudera Manager 7.1.x

Users affected: Users with admin role in Cloudera Manager can impact end users of the service.

Impact: In production clusters this can result in a cluster-wide service outage; Already observed for the YARN service and the HDFS service in a few clusters.

Severity: High

Action required:

- A workaround exists where instead of performing a restart we recommend performing a stop/start of the services.
- Issue is fixed in CM-6.3.4, CM-7.2.1 and above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Cloudera Manager installation fails on MariaDB 10.2.8 and later

When installing Cloudera Manager using MariaDB 10.2.8 or later, the Cloudera Manager web server doesn't come up and the install process ends with a failed status. The `cloudera-scm-server.log` includes the following SQL error:

```
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: SQL Error at 'UTF-8' line
57:
"alter table ROLE_CONFIG_GROUPS
drop column REVISION_ID"
Key column 'REVISION_ID' doesn't exist in table
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: Rolling back SQL
transaction.
2019-08-28 04:37:10,172 ERROR main:com.cloudera.enterprise.dbutil.SqlFileRunner: Exception
while executing ddl scripts.
com.mysql.jdbc.exceptions.jdbc4.MySQLSyntaxErrorException: Key column 'REVISION_ID'
doesn't exist in table
```

Note that MariaDB 10.2.8 is provided by default in some operating systems, including SLES 12 SP4.

Workaround: Replace the default MariaDB 10.2.x version with MariaDB 10.2.7.

Affected Versions: MariaDB 10.2.8 and later

Cloudera Issue: OPSAPS-52340

HBase Failure on Upgrade to Cloudera Manager 6.1

After upgrading from Cloudera Manager 5.14 (and??) to Cloudera Manager 6.1 and restarting the Hive service, running an HBase query cause the following error in beeline:

```
Error: java.io.IOException: org.apache.hadoop.hbase.client.RetriesExhaustedException:
Failed after attempts=36, exceptions:
```

Workaround:

1. In the Cloudera Manager Admin console, go to the Hive service.
2. Select the **Configuration** tab.
3. Search for the following property: HiveServer2 Environment Advanced Configuration Snippet (Safety Valve).

4. Add the following property and value:

```
HADOOP_CLASSPATH=/etc/hbase/conf
```

5. Click **Save Changes**.

6. Restart HiveServer2:

- a. Go to the Hive Service.
- b. Click the **Instances** tab.
- c. Click the **HiveServer2** link in the table.
- d. Click **Actions > Restart this HiveServer2**.

Cloudera Issue: OPSAPS 49330

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Cloudera Manager Server and Agents encounter TLS issues when the Agent config.ini file is misconfigured

The Cloudera Manager Server and Agents incorrectly thinks that TLS is enabled for the Agent if you set `use_tls=1` in the Agent `config.ini` but do not provide a key, certificate, or truststore. This causes several issues, including log messages that indicate TLS is enabled when it is not, missing files from diagnostic bundles, and unavailable logs.

Workaround: Ensure that you specify a key, certificate, and truststore when you configure `use_tls=1` in the Agent `config.ini` file.

Affected Versions: Cloudera Manager 6.1.x

Cloudera Issue: OPSAPS-48898, OPSAPS-48897

The restart Cloudera Manager Agent command does not restart the Agent Listener

When you restart the Cloudera Manager Agent, the Agent Listener (the `status_server` process) does not restart. This can cause issues if you make changes to TLS for Agents after you have installed Cloudera Manager since the Agent Listener needs to be restarted for TLS changes to take effect.

Workaround: Run the following command on every Agent host with `sudo`:

```
/opt/cloudera/cm-agent/bin/supervisorctl -c
/var/run/cloudera-scm-agent/supervisor/supervisord.conf restart status_server
```

This command requires root access to the host. `supervisorctl` is owned by the `cloudera-scm` user, but `supervisord.conf` is owned by `root`.

Affected Versions: Cloudera Manager 6.0.x, 6.1.x

Cloudera Issue: OPSAPS-48886

TSB-359 Backup and Disaster Recovery (BDR) HDFS and Hive Replications will fail on clusters running Cloudera Manager 6.1.0

Backup and Disaster Recovery (BDR) HDFS and Hive Replications will fail when replicating from secured (Kerberized) source clusters to destination clusters that have been upgraded to Cloudera Manager 6.1.0.

This also affects new installations of Cloudera Manager 6.1.0 on the destination cluster if an admin restarts the Cloudera Manager service.

Products affected: Cloudera Manager Backup and Disaster Recovery in a secure (Kerberized) environment

Releases affected: Cloudera Manager 6.1.0 (when used as the destination cluster of HDFS and/or Hive replication)

Users affected: Customers using HDFS or Hive Replication

Severity (Low/Medium/High): High

Root Cause and Impact:

In HDFS and Hive Replication, Cloudera Manager first runs a process on the destination cluster to verify if the replication is possible. Due to a bug, the source cluster is treated as an insecure (non-kerberized) cluster. As a result, replication fails.

You will see the exception `javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSEException: No valid credentials provided (Mechanism level: Fail to create credential. (63) - No service creds)]` in the process `stderr` logs.

Immediate action required: If you use BDR, do not upgrade a destination cluster to Cloudera Manager 6.1.0. Upgrade to Cloudera Manager 6.1.1 or higher when it becomes available.

If you have already upgraded your destination cluster to Cloudera Manager to 6.1.0, use the following workaround:

1. For an existing HDFS or Hive replication schedule, select **Actions > Edit Configuration**.
2. Save the schedule.

Please note that you will need to edit only one schedule even if you have multiple schedules.

Note: This workaround is not persistent. That is, if you restart the Cloudera Manager service, you must repeat the above workaround.

Cloudera Issue: OPSAPS-48865

Fixed in Cloudera Manager 6.1.1

BDR Job Mapper shows the following warning: AuthenticationException: GSSEException: No valid credentials provided

A BDR Job Mapper might succeed with the following stack trace in the log message:

```
2018-12-05 13:57:03,475 WARN [main]
org.apache.hadoop.crypto.key.kms.LoadBalancingKMSClientProvider: KMS provider at
[https://src-3.example.com:16000/kms/v1/] threw an IOException:
java.io.IOException:
org.apache.hadoop.security.authentication.client.AuthenticationException: GSSEException:
No valid credentials provided (Mechanism level: Fail to create credential. (63) - No
service creds)
at
org.apache.hadoop.crypto.key.kms.KMSClientProvider.createConnection(KMSClientProvider.java:492)
```

```
at
org.apache.hadoop.crypto.key.kms.KMSClientProvider.decryptEncryptedKey(KMSClientProvider.java:793)
```

The warning appears if you try to replicate from an encrypted source cluster that has multiple KMS instances.

Workaround: You can safely ignore this message because the client succeeds upon fail over.

Affected Versions: CDH 6.1.0

Cloudera Issue: CDH-76053

Diff Format changed for Configuration History page

Color formatting for the diff display omits the red and green colors that indicate what was removed and added.

Affected Versions: Cloudera Manager 6.1.0

Cloudera Issue: OPSAPS-48544

Backup and Disaster Recovery (BDR) performance regression after upgrading to CDH 6.0.0

Hive replication with BDR experiences a performance regression when comparing CDH 6.0.0 and CDH 5.14.4. The slowdown occurs during the import step. For example, the performance regression may only be 10% for 4 million partitions. As the number of partitions goes down though, the performance impact becomes more visible. For example, 100,000 partitions may experience a 20% performance regression.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0; CDH 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-47520

Cloudera Manager allows more than a single space in YARN Admin ACLs

When adding a YARN Admin ACL in Cloudera Manager, you are allowed to enter multiple spaces in the entry. The space is the separator between the user and group lists, and only a single space should be allowed in the entry. All entries that appear after a second single space in a YARN Admin ACL will be ignored.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-47688

Integer data types map to Float in Swagger API client

Integer data types show up as floating point numbers when using the Cloudera Manager API Python client.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-45689

Package Installation of CDH Fails

When you install CDH with packages from a custom repository, ensure that the version of CDH you select for **Select the version of CDH** matches the version of CDH for the custom repository. Selecting the CDH version and specifying a custom repository are done during the **Select Repository** stage of installation.

If the versions do not match, installation fails.

Affected Versions: Cloudera Manager 6.x

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: OPSAPS-45703

Backup and Disaster Recovery replication to/from Cloudera Manager 6 clusters require Cloudera Manager 5.14.0 or higher

You can only use BDR to replicate to/from clusters managed by Cloudera Manager 6 with Cloudera Manager 5.14.0 or higher.

Affected versions: Cloudera Manager 6.x

Cloudera Issue: OPSAPS-42207

Cloudera Manager 6.0.x Release Notes

To view release notes for specific Cloudera Manager 6.0.x releases, see the following:

[Cloudera Manager 6.0.1 Release Notes](#)

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.0.1:

[New Features in Cloudera Manager 6.0.1](#)

The following sections describe new and changed features for Cloudera Manager 6.0.1:

[New Features in Cloudera Manager 6.0.1](#)

Diagnostic Bundles

- Diagnostic bundles now contain the `DB_READ_LATENCY` metric.

Service Monitor

- Improved the performance of the Service Monitor by reducing memory consumption.

PostgreSQL 10 Support

- Added support for PostgreSQL version 10 for databases Cloudera Manager uses to store configuration, monitoring, and reporting data and for managed services that require a database.

Upgrade

- Added an upgrade check from CDH 5 to CDH 6 to check if HBase tables are using `PREFIX_TREE_ENCODING`.

[Fixed Issues in Cloudera Manager 6.0.1](#)

The following sections describes issue fixed in Cloudera Manager 6.0.1 releases:

[X-Frame-Options not set in latest C6](#)

Fixed an issue where a page in the Cloudera Manager Admin Console was not sending an X-Frame-Options header while other pages in the Admin Console did. The header is now sent.

Cloudera Issue: OPSAPS-47252

[Auto-TLS support for commands like Oozie's Upload Sharelib](#)

Fixed an issue that occurred when the Oozie Upload Sharelib command would fail due to missing TLS configuration if Auto-TLS is enabled.

Cloudera Issue: OPSAPS-47084

[CDH upgrade fails with checkJavaComponent\(DbHostHeartbeat.java:177\)](#)

Fixed a Java version parsing issue during Cloudera Manager upgrade.

Cloudera Issue: OPSAPS-47620

[CDH 6.0.0 upgrade validator fails when no Sentry service is available](#)

Fixed an issue that occurs when upgrading CDH 5 clusters with a Keystore Indexer but no Sentry service. A validator shows an empty error message in a popup when trying to upgrade to CDH 6.0.0. Note that when Sentry Policy File is enabled, users must either disable it or add a Sentry service in order for the policy file to be migrated automatically.

Cloudera Issue: OPSAPS-47617

[Agent install fails with "Installing hue-plugins package"](#)

Fixed an issue where a CDH 6.0.0 installation with packages fails.

Cloudera Issue: OPSAPS-47105

CDH Upgrade fails to delete Solr data from HDFS

Fixed an issue where where Solr index files were not getting deleted from HDFS during the upgrade process. This causes Solr to fail to start since files have an old index scheme.

Cloudera Issue: OPSAPS-47502

Cloudera Manager wizard shows CDH 5.15.0 as a package choice

Fixed an issue where CDH 5.15.0 was shown as a valid package choice for Cloudera Manager 6.0.0. For more information about valid CDH versions for Cloudera Manager 6.0.0, see [Upgrade paths](#).

Cloudera Issue: OPSAPS-47200

Host inspector shows psycopg2 version error even after psycopg2-2.6.2 is installed

Fixed an issue where hosts that run Redhat, Centos, or OEL showed incorrect host inspector results for the Python version check and for psycopg2 version check.

Cloudera Issue: OPSAPS-47217

Fix display vcore and memory values when they are not integers

Fixed the display of vcore and memory values to support values other than integers.

Cloudera Issue: OPSAPS-47271

Upgrade Service Inspector shows it passed, but the solr check failed

Fixed issue where the "Service Inspector" on the upgrade page was showing Solr in good health even though Solr had failures.

Cloudera Issue: OPSAPS-46958

Known Issues and Limitations in Cloudera Manager 6.0.1

The following sections describe known issues and limitations for Cloudera Manager 6.0.1:

Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.5 and later
- Cloudera Manager 6.0 until 6.3.3
- Cloudera Manager 7.1.x

Users affected: Users with admin role in Cloudera Manager can impact end users of the service.

Impact: In production clusters this can result in a cluster-wide service outage; Already observed for the YARN service and the HDFS service in a few clusters.

Severity: High

Action required:

- A workaround exists where instead of performing a restart we recommend performing a stop/start of the services.
- Issue is fixed in CM-6.3.4, CM-7.2.1 and above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Cloudera Manager installation fails on MariaDB 10.2.8 and later

When installing Cloudera Manager using MariaDB 10.2.8 or later, the Cloudera Manager web server doesn't come up and the install process ends with a failed status. The `cloudera-scm-server.log` includes the following SQL error:

```
2019-08-28 04:37:10,171 FATAL main:org.hsquidb.cmdline.SqlFile: SQL Error at 'UTF-8' line
57:
"alter table ROLE_CONFIG_GROUPS
drop column REVISION_ID"
Key column 'REVISION_ID' doesn't exist in table
2019-08-28 04:37:10,171 FATAL main:org.hsquidb.cmdline.SqlFile: Rolling back SQL
transaction.
2019-08-28 04:37:10,172 ERROR main:com.cloudera.enterprise.dbutil.SqlFileRunner: Exception
while executing ddl scripts.
com.mysql.jdbc.exceptions.jdbc4.MySQLSyntaxErrorException: Key column 'REVISION_ID'
doesn't exist in table
```

Note that MariaDB 10.2.8 is provided by default in some operating systems, including SLES 12 SP4.

Workaround: Replace the default MariaDB 10.2.x version with MariaDB 10.2.7.

Affected Versions: MariaDB 10.2.8 and later

Cloudera Issue: OPSAPS-52340

ZooKeeper JMX did not support TLS when managed by Cloudera Manager

The ZooKeeper service optionally exposes a JMX port used for reporting and metrics. By default, Cloudera Manager enables this port, but prior to Cloudera Manager 6.1.0, it did not support mutual TLS authentication on this connection. While JMX has a password-based authentication mechanism that Cloudera Manager enables by default, weaknesses have been found in the authentication mechanism, and Oracle now advises JMX connections to enable mutual TLS authentication in addition to password-based authentication. A successful attack may leak data, cause denial of service, or even allow arbitrary code execution on the Java process that exposes a JMX port. Beginning in Cloudera Manager 6.1.0, it is possible to configure mutual TLS authentication on ZooKeeper's JMX port.

Products affected: ZooKeeper

Releases affected: Cloudera Manager 6.1.0 and lower, Cloudera Manager 5.16 and lower

Users affected: All

Date/time of detection: June 7, 2018

Severity (Low/Medium/High): 9.8 High ([CVSS](#):3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H)

Impact: Remote code execution

CVE: CVE-2018-11744

Immediate action required: Upgrade to Cloudera Manager 6.1.0 and enable TLS for the ZooKeeper JMX port by turning on the configuration settings “Enable TLS/SSL for ZooKeeper JMX” and “Enable TLS client authentication for JMX port” on the ZooKeeper service and configuring the appropriate TLS settings. Alternatively, disable the ZooKeeper JMX port via the configuration setting “Enable JMX Agent” on the ZooKeeper service.



Note: Disabling the ZooKeeper JMX port prevents Cloudera Manager from performing health checks on the ZooKeeper service.

Addressed in release/refresh/patch: Cloudera Manager 6.1.0

The restart Cloudera Manager Agent command does not restart the Agent Listener

When you restart the Cloudera Manager Agent, the Agent Listener (the `status_server` process) does not restart. This can cause issues if you make changes to TLS for Agents after you have installed Cloudera Manager since the Agent Listener needs to be restarted for TLS changes to take effect.

Workaround: Run the following command on every Agent host with `sudo`:

```
/opt/cloudera/cm-agent/bin/supervisorctl -c  
/var/run/cloudera-scm-agent/supervisor/supervisord.conf restart status_server
```

This command requires root access to the host. `supervisorctl` is owned by the `cloudera-scm` user, but `supervisord.conf` is owned by `root`.

Affected Versions: Cloudera Manager 6.0.x, 6.1.x

Cloudera Issue: OPSAPS-48886

Backup and Disaster Recovery (BDR) performance regression after upgrading to CDH 6.0.0

Hive replication with BDR experiences a performance regression when comparing CDH 6.0.0 and CDH 5.14.4. The slowdown occurs during the import step. For example, the performance regression may only be 10% for 4 million partitions. As the number of partitions goes down though, the performance impact becomes more visible. For example, 100,000 partitions may experience a 20% performance regression.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0; CDH 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-47520

Cloudera Manager allows more than a single space in YARN Admin ACLs

When adding a YARN Admin ACL in Cloudera Manager, you are allowed to enter multiple spaces in the entry. The space is the separator between the user and group lists, and only a single space should be allowed in the entry. All entries that appear after a second single space in a YARN Admin ACL will be ignored.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-47688

Integer data types map to Float in Swagger API client

Integer data types show up as floating point numbers when using the Cloudera Manager API Python client.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-45689

Apache Accumulo is not supported with Cloudera Manager

Running Apache Accumulo on top of a CDH 6.0.0 cluster is not currently supported. If you try to upgrade to CDH 6.0.0 you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1

Fixed Versions: Cloudera Manager 6.1.0

Cloudera Issue: OPSAPS-42807, OPSAPS-42814

Cloudera Data Science Workbench is not supported with Cloudera Manager 6.0.x

Cloudera Data Science Workbench is not supported with Cloudera Manager 6.0.x. Cloudera Data Science Workbench 1.5.0 (and higher) is supported with Cloudera Manager 6.1.x (and higher).

Affected Versions: Cloudera Manager 6.0.x

Cloudera Issue: DSE-2769

Externally authenticated users cannot view their roles or previous session

Usually, a user can see their assigned roles and most recent successful login by navigating to `<Username> > My Profile` in the Cloudera Manager Admin Console. The fields appear blank for users who use an external authentication method, such as SAML.

This issue is only a display issue and does not affect any functionality. The user can perform any tasks available to their assigned roles.

Workaround: User accounts with roles that can view the **Roles** page, such as a Full Administrator, can view the roles assigned to all Cloudera Manager user accounts and their session information.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1

Fixed Versions: Cloudera Manager 6.1.0

Cloudera Issue: OPSAPS-46996, OPSAPS-47025

Package Installation of CDH Fails

When you install CDH with packages from a custom repository, ensure that the version of CDH you select for **Select the version of CDH** matches the version of CDH for the custom repository. Selecting the CDH version and specifying a custom repository are done during the **Select Repository** stage of installation.

If the versions do not match, installation fails.

Affected Versions: Cloudera Manager 6.x

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: OPSAPS-45703

Backup and Disaster Recovery replication to/from Cloudera Manager 6 clusters require Cloudera Manager 5.14.0 or higher

You can only use BDR to replicate to/from clusters managed by Cloudera Manager 6 with Cloudera Manager 5.14.0 or higher.

Affected versions: Cloudera Manager 6.x

Cloudera Issue: OPSAPS-42207

Cloudera Manager 6.0.0 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for Cloudera Manager 6.0.0:

[New Features in Cloudera Manager 6.0.0](#)

The following sections describe new and changed features for Cloudera Manager 6.0.0:

[New Features in Cloudera Manager 6.0.0](#)

API

You can now access the Cloudera Manager Swagger API user interface through the Cloudera Manager Admin Console. Navigate to **Support > API Explorer** to open Swagger.

Cloudera Manager 6.0 introduces new Python and Java API clients based on the [Swagger](#) API. These new API clients support all Cloudera Manager API versions.

Compatibility with Older Versions

The [Older Python client](#) [Older Java client](#) are still supported when the API version is lower than 30. Therefore, older Python and Java API clients can still be used with Cloudera Manager version 6.0 and higher as long as API version 19 or lower is used.

For example, a customer can use old Cloudera Manager API client version 5.14 with Cloudera Manager version 6.0, which by default invokes API version 19. If a customer wants to use new features that were introduced in Cloudera Manager 6.0, (API version 30) then customer must use the new API clients.

Older Python and Java clients and new Swagger-based Python and Java clients can co-exist in an application to allow for incremental transition to new the Swagger-based Python and Java clients.

Auto-TLS

Auto-TLS simplifies configuring TLS for clusters managed by Cloudera Manager. Cloudera Manager can now add hosts with TLS certificates automatically generated. Additionally, when you add new CDH services, Cloudera Manager populates the TLS configuration for the service.

You can use self-signed certificates created by Cloudera Manager's internal certificate authority, or you can use certificates you already have from a trusted public CA or your own internal CA.

An Enterprise or Trial license is required to enable Auto-TLS.

For more information, see [Configuring TLS Encryption for Cloudera Manager and CDH Using Auto-TLS](#).

Cluster-specific User Roles

You can now assign privileges for specific clusters to the following user roles: Cluster Administrator, Operator, Limited Operator, Configurator, and Read-Only.

For example, the user account `lucy` has the Cluster Administrator role with privileges for a cluster named `Cluster1`. `lucy` can only perform the Cluster Administrator actions on `Cluster1`. She cannot perform actions on any other cluster managed by Cloudera Manager.

For more information, see [Cloudera Manager User Roles](#).

Common Service Descriptors (CSD)

- CSDs can now specify more than one repository for parcels. A list of URLs can be specified via the new property `additionalRepoUrls` of the parcel descriptor.
- CSD authors can declare a set of invalid values for numeric parameters for the following types: long, double, port, and memory.

HBase

New command to create the HBase HDFS WAL directory in a separate location. By default the HBase HDFS WAL directory is created in `/hbase/WALS`. New command allows the HBase HDFS WAL directory to be created a different location. After setting the separate WAL directory, the Hbase service needs to be restarted.

Cell-Level ACL Checks

Newly deployed Cloudera Manager managed clusters will now optimize for HBase Cell-Level ACL checks by default with the `hbase.security.access.early_out` property. The property controls whether certain checks can be skipped for performance reasons

Impala

Cloudera Manager now collects more metrics that are helpful to Impala administrators for monitoring Catalog size and Impala Daemon health. Metrics from Impala Daemons help track the amount of memory used by the Java Virtual Machine (JVM) embedded in the Impala Daemon process. Use the metrics to understand memory consumption, particularly the memory consumption of the Catalog cache stored in coordinator Impala Daemons. The new metrics are:

- `impala_jvm_heap_committed_usage_byte`
- `impala_jvm_heap_current_usage_bytes`
- `impala_jvm_heap_init_usage_bytes`
- `impala_jvm_heap_max_usage_bytes`

Kafka

- Added `num.network.threads` as a configuration setting for Kafka brokers.
- Kafka's broker heap size is now configurable in the Cloudera Manager Admin Console wizard for Kafka.

Security

Cloudera Manager now passes SSL keystore credentials to SOLR through the Hadoop Credential Store.

Scalability

- The performance for the cluster status table loading time on the **Cloudera Manager Admin Console** home page for large clusters has been improved.
- The cluster restart command/operation can be retried now. This is especially helpful in a large cluster where the user has an opportunity to fix the cluster restart failure and retry the failed command.
- When Cloudera Manager sees multiple agents with the same hostname or IP appearing, it will ask users to adjust the UUID on the host and remove the agent that has no roles running.

Upgrade

Cloudera Manager has the following upgrade improvements:

- New upgrade wizard and documentation.

The [Cloudera Enterprise Upgrade Guide](#) allows you to create a customized version of the guide that only includes the steps required for your upgrade. You can use a form at the top of pages in the guide to select your Cloudera Enterprise versions, operating system versions, databases, and other information about your upgrade. The information you enter is retained on each page in the guide.

- You can now run the Host and Service inspectors up to two days prior to an upgrade. This allows a long running inspection to complete prior to starting the upgrade.
- Rolling upgrades for CDH have been improved. YARN jobs running MapReduce2 are now configured to read MapReduce JARs from HDFS instead of from local disk. This makes jobs more robust during rolling upgrade when the local binaries are modified while a job is executing. Clusters created in or upgrading to CDH 6.0 will use this new behavior.

Changes in Cloudera Manager 6.0.0

Agents

Because of changes to Cloudera Manager, the commands used for a hard stop and hard restart have changed.

For more information, see [Starting, Stopping, and Restarting Cloudera Manager Agents](#).

API names

The following API names have changed to fix typos:

- `hiverserver2_load_balancer` has been changed to `hiveserver2_load_balancer`
- `hbase_client_java_opts` has been changed to `hdfs_client_java_opts`
- `hbase_active_master_detecton_window` has been changed to `hbase_active_master_detection_window`
- `hdfs_active_namenode_detecton_window` has been changed to `hdfs_active_namenode_detection_window`
- `mapreduce_active_jobtracker_detecton_window` has been changed to `mapreduce_active_jobtracker_detection_window`
- `yarn_active_resourcemanager_detecton_window` has been changed to `yarn_active_resourcemanager_detection_window`

The `hiverserver2_load_balancer` change affects Hive services when HiveServer 2 is configured for High Availability.

The `hdfs_client_java_opts` parameter configures the Client Java Configuration Options, found under the HDFS Gateway role configuration.

The other parameters tune the behavior of health test checking for the HBase Master, HDFS NameNode, MapReduce JobTracker, and YARN ResourceManager respectively.

Any API scripts or cluster templates referencing the old names will need to be updated to use the new names.

Cloudera Issue: OPSAPS-33266, OPSAPS-39223, and OPSAPS-24569

Client Configurations

Downloading the client configuration for a service now requires a user account that meets the following requirements: the user account must be assigned a user role that has permission to perform the action and has privileges for the specific cluster because of the new cluster-specific user role feature.

External Authentication

Previously, Cloudera Manager, by default, mapped specific values from an external authentication method to Cloudera Manager user roles.

For example, if the authentication method for Cloudera Manager is a SAML Script, Cloudera Manager automatically mapped exit codes 0 to 11 to the user roles that Cloudera Manager ships with. If you upgrade to Cloudera Manager 6, these mappings are preserved. You can continue using these default mappings, create additional ones, or map different values.



Important: If you create external authentication entities, such as a new LDAP group, and do not map it to a Cloudera Manager user role, the users in that group will default to no access. Users in the group cannot perform any actions on the cluster.

If you perform a fresh installation of Cloudera Manager, values must be mapped to user roles manually in Cloudera Manager.

Additionally, LDAP Group, SAML Attribute, and External Program to user role mappings are no longer done through the **Administration > Settings** page. Instead, like the exit codes for SAML Scripts, they are configured on the new **Administration > Users & Roles (previously Users) > <Authentication Method>** page.

For more information, see [Mapping External Authentication to a Role](#).

HBase

- Updated property values:

Updated the default values for the following properties to match the upstream defaults:

- `hbase.snapshot.region.timeout`
- `hbase.snapshot.master.timeout.millis`
- `hbase.client.retries.number` (all roles)
- `hbase.hstore.blockingStoreFiles` (regionserver)

Removed the following values:

- `hbase.snapshot.master.timeoutMillis`
 - `hbase.fs.tmp.dir` (all roles)
 - `hbase.bucketcache.combinedcache.enabled` (regionserver)
 - `hbase.bulkload.staging.dir` (regionserver)
 - `hbase.regionserver.hlog.blocksize` (regionserver)
- The HBase Thrift Server now turns on Framed Transport and Compact Protocols by default out of the box for safety reasons. This may require code changes to any custom client-side thrift programs that connect to the HBase Thrift Server to continue working.

Kafka

- **Data Retention Hours property** - The Kafka Broker parameter **Data Retention Hours** (`data.retention.hours`) was removed from the Cloudera ManagerAdmin console. Use **Data Retention Time** (`data.retention.ms`) parameter instead.
- **Default Kafka minimum heap** - The default minimum allowed heap for Kafka has been increased to 256 MB. The recommended minimum heap is 512 MB. If your Kafka broker heap size is set to a value less than 256 MB, increase it to 256 MB or higher.

Menu Names

The following list describes changes to menu names:

- **Users**

The **Users** page that is accessed from the **Administration** menu has been renamed to **Users & Roles**.

New Users

If you create a user and do not assign a role to it, the user defaults to no access. The user cannot perform any actions on the cluster.

Reporting

The default HDFS block count reporting threshold for Cloudera Manager has been changed to 1000000 from 500000. When you upgrade, the configuration will be updated to the new default if you are using the default.

User Roles

The Dashboard and Auditor user roles can now view the Solr Collection Statistics and the HBase Table Statistics pages.

Fixed Issues in Cloudera Manager 6.0.0

The following sections describes issue fixed in Cloudera Manager 6.0.0 releases:

Open Redirect and XSS in Cloudera Manager

Technical Service Bulletin 2018-321 (TSB)

One type of page in Cloudera Manager uses a `returnUrl` parameter to redirect the user to another page in Cloudera Manager once a wizard is completed. The validity of this parameter was not checked. As a result, the user could be automatically redirected to an attacker's external site or perform a malicious JavaScript function that results in cross-site scripting (XSS).

With this fix, Cloudera Manager no longer allows any value in the `returnUrl` parameter with patterns such as `http://`, `https://`, `///`, or `javascript`. The only exceptions to this rule are the SAML login/logout URLs, since they are explicitly configured and are not passed via the `returnUrl` parameter.

Products affected: Cloudera Manager

Releases affected:

- 5.15.0 and all earlier releases

Users affected: The following Cloudera Manager roles: "cluster administrator", "full administrators", and "configurators".

Date/time of detection: June 20, 2018

Detected by: Mohit Rawat & Ekta Mittal

Severity (Low/Medium/High): 8.8 High (CVSS:3.0/AV:N/AC:L/PR:N/UI:R/S:U/C:H/I:H/A:H)

Impact: [Open redirects](#) can silently redirect a victim to an attacker's site. XSS vulnerabilities can be used to steal credentials or to perform arbitrary actions as the targeted user.

CVE: CVE-2018-15913

Immediate action required: Upgrade to Cloudera Manager 5.15.1 or higher

Addressed in release/refresh/patch:

- Cloudera Manager 5.15.1 and higher
- Cloudera Manager 6.0.0

Hard Restart of Cloudera Manager Agents May Cause Subsequent Service Errors

If a "hard restart" or "hard stop" operation is performed on a Cloudera Manager Agent, the restarted agent will erroneously restart roles that existed prior to the restart and, subsequently, 60 days later, these roles may experience errors or be killed.

Affected Versions: All versions of Cloudera Manager 5.x

Cloudera Issue: OPSAPS-43550, TSB-308

Knowledge base: For the latest update on this issue, see the corresponding Knowledge article: TSB 2018-308: Hard Restart of Cloudera Manager Agents May Cause Subsequent Service Errors

Logging issue slows down Backup and Disaster Recovery Hive and HDFS Replication jobs

Fixed the issue described in TSB-289. For more information, see the TSB.

Cloudera Issue: OPSAPS-44160

Cloudera Manager upgrade workflow incorrectly requires deploying some optional management roles

Fixed the issue described in TSB-290 where you could not proceed through the upgrade process without adding certain optional management roles. For more information, see TSB-290.

Cloudera Issue: OPSAPS-44629

Microsoft Azure Credentials in Log Files

Fixed an issue where Microsoft Azure credentials might appear in Hive audit logs.

Cloudera Issue: CDH-56241

Non-production installation of Cloudera Manager on SLES 12 does not work

Fixed an issue where the non-production installation of Cloudera Manager did not work on SLES 12.

Impala and Kudu logs missing from diagnostic bundle

Fixed an issue where Impala and Kudu logs were missing from the diagnostic bundle if their log directories have broken symlinks.

Cloudera Issue: OPSAPS-41194

Services die due to HDFS taking too long to start

Fixed an issue where HDFS takes a long time to come up after a restart, causing some dependent services to fail to start.

Cloudera Issue: CDH-54889

Instances and Hosts page refresh when a command dialog is closed

Fixed an issue where the **Instances** and **All Hosts** pages reloads reload when a command finishes.

Cloudera Issue: OPSAPS-45761

Spark cross-realm authentication fails

Spark now correctly respects `auth_to_local` name rules for HDFS services with cross-realm trust configured.

Cloudera Issue: OPSAPS-46103

Error "Mismatched input PATTERN expecting EOF" the detailUsage page for the Resource Manager

Fixed the issue where a user sees an error message about Mismatched input PATTERN.

Cloudera Issue: OPSAPS-42437

Upgrading a license finishes on the wrong page

The Enable Trial workflow previously ended up on the upgrade page. Now it goes to the Home page upon completion.

Cloudera Issue: OPSAPS-45444

Open Redirect in Cloudera Manager Add Service

Fixed an issue where Cloudera Manager redirected to arbitrary URLs upon the completion of a workflow. Cloudera Manager now limits it to paths on the same host/port

Cloudera Issue: OPSAPS-46681

Kafka broker and MirrorMaker should only listen on the loopback interface for JMX connections

Kafka broker and MirrorMaker processes now listen on only the loopback interface for JMX connections. The fix causes Kafka brokers and MirrorMaker to be marked as stale after upgrading to Cloudera Manager 6.0.0 or later.

Perform a rolling restart of Kafka brokers and MirrorMaker.

Cloudera Issue: OPSAPS-46633

Remove the IMPALA_ASSIGNMENT_LOCALITY Impala check

This check was removed.

Cloudera Issue: OPSAPS-46807

Inconsistent handling of case sensitivity for cluster names in URLs

Fixed an issue where cases sensitivity for cluster names was not handled consistently with the API, mainly related to the cluster name. For example, the end point `"/api/v6/clusters/cluster 1/services"` and `"/api/v6/clusters/Cluster 1/services"` are equivalent.

Cloudera Issue: OPSAPS-43691

HBase Indexer can possibly emit sentry client configs even if sentry isn't directly configured

On a KeyValue Store Indexer service, Sentry was enabled if the Solr dependency was using Sentry, even if the KeyValue Store Indexer was set to none in its Sentry dependency configuration. This is now corrected for CDH 5.14 or higher clusters.

After upgrading Cloudera Manager, clusters on CDH 5.14 or higher will be marked as stale if you have Sentry enabled for Solr but not enabled for KeyValue Store Indexer. If you are affected by this issue, restart the stale services to apply the fix.

Cloudera Issue: OPSAPS-43695

GenerateHostCerts command doesn't use passphrase for SSH key auth

When using the `generateHostCerts` command API, the password field was being used instead of the passphrase field for SSH keypair-based authentication. This is now fixed so that the `userName` and `password` fields are used for username/password authentication, and the `privateKey` and `passphrase` fields are used for keypair-based authentication.

Cloudera Issue: OPSAPS-45514

dfs.client.block.write.replace-datanode-on-failure.enable property

HBase will respect HDFS settings for `dfs.client.block.write.replace-datanode-on-failure`.

Cloudera Issue: OPSAPS-36611

API names

The following API names have changed to fix typos:

- `hiverserver2_load_balancer` has been changed to `hiveserver2_load_balancer`
- `hbase_client_java_opts` has been changed to `hdfs_client_java_opts`
- `hbase_active_master_detecton_window` has been changed to `hbase_active_master_detection_window`
- `hdfs_active_namenode_detecton_window` has been changed to `hdfs_active_namenode_detection_window`
- `mapreduce_active_jobtracker_detecton_window` has been changed to `mapreduce_active_jobtracker_detection_window`
- `yarn_active_resourcemanager_detecton_window` has been changed to `yarn_active_resourcemanager_detection_window`

The `hiverserver2_load_balancer` change affects Hive services when HiveServer 2 is configured for High Availability.

The `hdfs_client_java_opts` parameter configures the Client Java Configuration Options, found under the HDFS Gateway role configuration.

The other parameters tune the behavior of health test checking for the HBase Master, HDFS NameNode, MapReduce JobTracker, and YARN ResourceManager respectively.

Any API scripts or cluster templates referencing the old names will need to be updated to use the new names.

Cloudera Issue: OPSAPS-33266, OPSAPS-39223, and OPSAPS-24569

Cloudera Manager fails to enable Kerberos if TLS is configured

Fixed an issue where the wizard for Kerberos fails if TLS is enabled. When enabling Kerberos to a cluster running TLS, the system cannot use the privileged ports (<1024). Instead, the wizard will prompt the user to use the appropriate port values.

Cloudera Issue: OPSAPS-33345

Cloudera Manager Agent install or upgrade hangs

During Cloudera Manager agent installs or upgrades, Cloudera Manager accesses both Cloudera and non-Cloudera repositories. Fixed an issue where the installation or upgrade could hang due to a misconfigured or problematic third party repository.

Cloudera Issue: OPSAPS-45576

CDH did not install Kudu when using packages

Fixes an issue where Cloudera Manager did not install Kudu packages when CDH was installed using packages instead of parcels.

Cloudera Issue: OPSAPS-45692

"create" option in nestedUserQueue allocation rule is added to the wrong part of the allocation rules in the fair scheduler configuration

The Dynamic Resource Pools user interface now supports the following placement rules and pool creation policy can be separately configured for the parent group as well as the individual user group:

- root.primaryGroup.username
- root.secondaryExistingGroup.username
- root.[pool name].username

Previously, only the create="true|false" flag could be added to the inner element of the nestedUserQueue element. This meant that a root.primaryGroup or root.secondaryExistingGroup pool could be created, which was not correct. Now, you can add the create="true|false" flag to the actual nestedUserQueue element as well as the inner element of the nestedUserQueue element. An additional restriction is that if root.<parent>.username should use an existing pool (create = false), then root.<parent> must also use an existing pool.

Cloudera Issue: OPSAPS-42803

Display steady fairshare that correspond to weight in YARN Dynamic Resource Pool Configuration

Two columns are added to the Dynamic Resources Pool Configuration 'Resource Pool' table - Fair Share Cpu and Memory. These display the resources allocated to each pool, based on the % of resources allocated via their fair share weights. If min resources are specified for pools, the fair share values will not accurately reflect resource allocation. These values are displayed only for pools that do not have any sub-pools.

Cloudera Issue: OPSAPS-45188

[oozie] Emit correct port in load balancer urls

The 'oozie_load_balancer' CM configuration parameter has been changed. Previously it was specified as '<hostname>:<port>' format. In CM 5.15 and later the format is simply '<hostname>'. As this format change is incompatible, please note that any client reading this value via API should also read as necessary the load balancer port configuration parameters ('oozie_load_balancer_http_port' and 'oozie_load_balancer_https_port'); the correct port parameter to use depends on whether SSL is enabled (value of 'oozie_use_ssl')

Cloudera Issue: OPSAPS-43846

Yarn NodeManager stale due to missing CCgroups

Fixed an issue when using YARN with CGroups. The YARN NodeManager may show as being stale due to System Resources even when it is not. The diff of it will show `named-cpu` as having changed even when it was not modified.

Cloudera Issue: OPSAPS-43973*Upgraded Jetty version*

Jetty updated to version 9.4.6.v20170531 to fix CVE-2017-9735.

Cloudera Issue: OPSAPS-42317*Impala Dynamic Resource Pools wrongly gives everyone access to root pool (and all child pools)*

Fixed an issue where all users had access to all Impala resource pools if no users or groups were specified in the root pool. Now, no users get access to a pool if no users or groups is specified.

Cloudera Issue: OPSAPS-45046*YARN Dynamic Resource Pools wrongly gives everyone access to root pool (and all child pools)*

Fixed an issue where all users had access to all YARN resource pools if no users or groups were specified in the root pool. Now, no users get access to a pool if no users or groups is specified.

Cloudera Issue: OPSAPS-44949

Known Issues and Limitations in Cloudera Manager 6.0.0

The following sections describe known issues and limitations for Cloudera Manager 6.0.0:

Cloudera Manager 6.x issue with the service role Resume

If a selected service role on a node is restarted and fails, and the customer clicks the "Resume" button in Cloudera Manager, the service role on all of the nodes will be restarted concurrently.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.5 and later
- Cloudera Manager 6.0 until 6.3.3
- Cloudera Manager 7.1.x

Users affected: Users with admin role in Cloudera Manager can impact end users of the service.

Impact: In production clusters this can result in a cluster-wide service outage; Already observed for the YARN service and the HDFS service in a few clusters.

Severity: High

Action required:

- A workaround exists where instead of performing a restart we recommend performing a stop/start of the services.
- Issue is fixed in CM-6.3.4, CM-7.2.1 and above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Cloudera Manager 6.x issue with service role Resume](#)

Cloudera Manager installation fails on MariaDB 10.2.8 and later

When installing Cloudera Manager using MariaDB 10.2.8 or later, the Cloudera Manager web server doesn't come up and the install process ends with a failed status. The `cloudera-scm-server.log` includes the following SQL error:

```
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: SQL Error at 'UTF-8' line
57:
"alter table ROLE_CONFIG_GROUPS
drop column REVISION_ID"
Key column 'REVISION_ID' doesn't exist in table
2019-08-28 04:37:10,171 FATAL main:org.hsqldb.cmdline.SqlFile: Rolling back SQL
transaction.
2019-08-28 04:37:10,172 ERROR main:com.cloudera.enterprise.dbutil.SqlFileRunner: Exception
while executing ddl scripts.
com.mysql.jdbc.exceptions.jdbc4.MySQLSyntaxErrorException: Key column 'REVISION_ID'
doesn't exist in table
```

Note that MariaDB 10.2.8 is provided by default in some operating systems, including SLES 12 SP4.

Workaround: Replace the default MariaDB 10.2.x version with MariaDB 10.2.7.

Affected Versions: MariaDB 10.2.8 and later

Cloudera Issue: OPSAPS-52340

ZooKeeper JMX did not support TLS when managed by Cloudera Manager

The ZooKeeper service optionally exposes a JMX port used for reporting and metrics. By default, Cloudera Manager enables this port, but prior to Cloudera Manager 6.1.0, it did not support mutual TLS authentication on this connection. While JMX has a password-based authentication mechanism that Cloudera Manager enables by default, weaknesses have been found in the authentication mechanism, and Oracle now advises JMX connections to enable mutual TLS authentication in addition to password-based authentication. A successful attack may leak data, cause denial of service, or even allow arbitrary code execution on the Java process that exposes a JMX port. Beginning in Cloudera Manager 6.1.0, it is possible to configure mutual TLS authentication on ZooKeeper's JMX port.

Products affected: ZooKeeper

Releases affected: Cloudera Manager 6.1.0 and lower, Cloudera Manager 5.16 and lower

Users affected: All

Date/time of detection: June 7, 2018

Severity (Low/Medium/High): 9.8 High ([CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H](#))

Impact: Remote code execution

CVE: CVE-2018-11744

Immediate action required: Upgrade to Cloudera Manager 6.1.0 and enable TLS for the ZooKeeper JMX port by turning on the configuration settings "Enable TLS/SSL for ZooKeeper JMX" and "Enable TLS client authentication for JMX port" on the ZooKeeper service and configuring the appropriate TLS settings. Alternatively, disable the ZooKeeper JMX port via the configuration setting "Enable JMX Agent" on the ZooKeeper service.



Note: Disabling the ZooKeeper JMX port prevents Cloudera Manager from performing health checks on the ZooKeeper service.

Addressed in release/refresh/patch: Cloudera Manager 6.1.0

The restart Cloudera Manager Agent command does not restart the Agent Listener

When you restart the Cloudera Manager Agent, the Agent Listener (the `status_server` process) does not restart. This can cause issues if you make changes to TLS for Agents after you have installed Cloudera Manager since the Agent Listener needs to be restarted for TLS changes to take effect.

Workaround: Run the following command on every Agent host with `sudo`:

```
/opt/cloudera/cm-agent/bin/supervisorctl -c  
/var/run/cloudera-scm-agent/supervisor/supervisord.conf restart status_server
```

This command requires root access to the host. `supervisorctl` is owned by the `cloudera-scm` user, but `supervisord.conf` is owned by `root`.

Affected Versions: Cloudera Manager 6.0.x, 6.1.x

Cloudera Issue: OPSAPS-48886

Backup and Disaster Recovery (BDR) performance regression after upgrading to CDH 6.0.0

Hive replication with BDR experiences a performance regression when comparing CDH 6.0.0 and CDH 5.14.4. The slowdown occurs during the import step. For example, the performance regression may only be 10% for 4 million partitions. As the number of partitions goes down though, the performance impact becomes more visible. For example, 100,000 partitions may experience a 20% performance regression.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0; CDH 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-47520

Cloudera Manager allows more than a single space in YARN Admin ACLs

When adding a YARN Admin ACL in Cloudera Manager, you are allowed to enter multiple spaces in the entry. The space is the separator between the user and group lists, and only a single space should be allowed in the entry. All entries that appear after a second single space in a YARN Admin ACL will be ignored.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-47688

Integer data types map to Float in Swagger API client

Integer data types show up as floating point numbers when using the Cloudera Manager API Python client.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Cloudera Issue: OPSAPS-45689

Solr Service reports stale configurations even after restart

Solr reports stale configurations, and the Solr Server role fails to start with the following error: Role failed to start due to error: The archive already contains `creds.local.jceks`. The issue occurs if your deployment has Solr and HDFS uses LDAP Group Mapping.

Workaround: If you have a CDH 5 cluster and use LDAP Group Mapping, do not upgrade to CDH 6.0.0. If you have a CDH 6.0.0 cluster, disable LDAP Group Mappings.

Affected Versions: Cloudera Manager 6.0.0 and CDH 6.0.0

Fixed Versions: Cloudera Manager 6.0.1

Cloudera Issue: OPSAPS-47321

Apache Accumulo is not supported with Cloudera Manager

Running Apache Accumulo on top of a CDH 6.0.0 cluster is not currently supported. If you try to upgrade to CDH 6.0.0 you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1

Fixed Versions: Cloudera Manager 6.1.0

Cloudera Issue: OPSAPS-42807, OPSAPS-42814

Cloudera Data Science Workbench is not supported with Cloudera Manager 6.0.x

Cloudera Data Science Workbench is not supported with Cloudera Manager 6.0.x. Cloudera Data Science Workbench 1.5.0 (and higher) is supported with Cloudera Manager 6.1.x (and higher).

Affected Versions: Cloudera Manager 6.0.x

Cloudera Issue: DSE-2769

Externally authenticated users cannot view their roles or previous session

Usually, a user can see their assigned roles and most recent successful login by navigating to **<Username> > My Profile** in the Cloudera Manager Admin Console. The fields appear blank for users who use an external authentication method, such as SAML.

This issue is only a display issue and does not affect any functionality. The user can perform any tasks available to their assigned roles.

Workaround: User accounts with roles that can view the **Roles** page, such as a Full Administrator, can view the roles assigned to all Cloudera Manager user accounts and their session information.

Affected Versions: Cloudera Manager 6.0.0, 6.0.1

Fixed Versions: Cloudera Manager 6.1.0

Cloudera Issue: OPSAPS-46996, OPSAPS-47025

Package Installation of CDH Fails

When you install CDH with packages from a custom repository, ensure that the version of CDH you select for **Select the version of CDH** matches the version of CDH for the custom repository. Selecting the CDH version and specifying a custom repository are done during the **Select Repository** stage of installation.

If the versions do not match, installation fails.

Affected Versions: Cloudera Manager 6.x

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: OPSAPS-45703

Backup and Disaster Recovery replication to/from Cloudera Manager 6 clusters require Cloudera Manager 5.14.0 or higher

You can only use BDR to replicate to/from clusters managed by Cloudera Manager 6 with Cloudera Manager 5.14.0 or higher.

Affected versions: Cloudera Manager 6.x

Cloudera Issue: OPSAPS-42207

Stale Configurations

When you upgrade Cloudera Manager, configurations for some services may become stale. This page describes those configurations and whether a restart can be delayed.

Sentry and Solr stale configuration

On a KeyValue Store Indexer service, Sentry was enabled if the Solr dependency was using Sentry, even if the KeyValue Store Indexer was set to none in its Sentry dependency configuration. This is now corrected for CDH 5.14 or higher clusters.

After upgrading Cloudera Manager, clusters on CDH 5.14 or higher will be marked as stale if you have Sentry enabled for Solr but not enabled for KeyValue Store Indexer. If you are affected by this bug, restart the stale services to pick up this fix.

Cloudera Issue: OPSAPS-43695

Kafka Broker and MirrorMaker stale configuration

Kafka broker and MirrorMaker processes now listen on only the loopback interface for JMX connections. The fix causes Kafka brokers and MirrorMaker to be marked as stale after upgrading to Cloudera Manager 6.0.0 or later.

Perform a rolling restart of Kafka.

Cloudera Issue: OPSAPS-46633

HDFS DataNode stale configuration

After upgrading to Cloudera Manager 5.10 or higher, the following configuration for HDFS DataNodes will be marked as stale: `dfs.datanode.balance.max.concurrent.moves`.

The staleness is caused by the following new feature: HDFS balancer can now be configured to specify which hosts are included and excluded or which hosts are used as sources for transferring replicas. Additional properties for tuning the performance of the balancer can now also be configured starting with CDH 5.10.0.

You can safely ignore this warning and defer restarting.

Cloudera Issue: OPSAPS-36642

YARN MapReduce Job History stale configuration

When upgrading to Cloudera Manager 5.10, YARN will be marked as having stale configuration due to `mapreduce.jobhistory.loadedjob.tasks.max`. Unless you change this parameter and want the non-default value to take effect (only takes effect in CDH 5.9+), you can simply ignore this staleness and defer restarting YARN.

Cloudera Issue: OPSAPS-32132

Change in Hue Load Balancer version causes Hue Load Balancer and Server to be marked with stale configuration

After upgrading Cloudera Manager, the Hue Load Balancer and Server roles will be marked as having a stale configuration if all of these are true:

- The **Enable TLS/SSL for Hue** property is set to true.
- The Hue load balancer is enabled

Workaround: If your cluster uses Apache httpd 2.4 as the Hue load balancer, restart the Hue service promptly. If your cluster uses an earlier version of httpd, there is no urgency to restart the Hue service. (Apache httpd 2.4 is installed automatically by some recent versions of Linux, or may have been explicitly installed.)

Cloudera Issue: OPSAPS-40700, OPSAPS-41850

Hue Load Balancer SSL Handshake error

The Hue load balancer previously set the `ProxyPreserveHost` directive to `On`, when it should have been set to `Off`. This causes problems making SSL connections when using Apache httpd 2.4 or higher. The error caused problems when verifying the CN, which older versions of Apache httpd did not encounter because they did not properly verify the CN.

When upgrading Cloudera Manager, the Hue load balancer may be marked as having a stale configuration. If you are experiencing issues connecting to Hue with SSL, restart the Hue service to update the configuration.

Cloudera Issue: OPSAPS-40700

Maintenance State Minimal Block Replication staleness after upgrade

Upgrading to Cloudera Manager 5.12 or later may show `Maintenance State Minimal Block Replication` as a stale configuration under HDFS, suggesting a restart. It is safe to ignore this warning and delay restart.

Cloudera Issue: OPSAPS-39102

YARN ACL configuration property staleness after upgrade

After upgrading to Cloudera Manager 5.12 or higher, the following YARN configuration properties may show staleness warnings:

- ACL for viewing a job - `mapreduce.job.acl-view-job`
- ACL for modifying a job - `mapreduce.job.acl-modify-job`
- Enable MapReduce ACLs - `mapreduce.cluster.acls.enabled`

It is safe to defer restart if you are not using YARN job view/modify ACLs.

Cloudera Issue: OPSAPS-33586

CDH 6 Release Notes

These Release Notes provide information on new features, fixed issues, known issues, limitations, and incompatible changes for CDH 6.

If you are using CDH 5, see the [CDH 5 Release Notes](#).

To view the Release Notes for specific CDH 6 releases, see the following:

For links to the detailed change lists that describe the bug fixes and improvements to all of the CDH 6 projects, see [CDH Packaging Information](#).

For more information about installing and configuring CDH 6, see [Cloudera Installation Guide](#).

CVE 2021-44228 Remediation for Cloudera Enterprise 6.3.3 and 6.3.4

As mentioned in [Cloudera Technical Service Bulletin 2021-545](#) (Critical vulnerability in log4j2 CVE-2021-44228), the Cloudera Enterprise 6.3.3 and 6.3.4 (Cloudera Distributed Hadoop (CDH) and Cloudera Manager (CM) are impacted by the recent Apache Log4j2 vulnerability. As per that bulletin:

The Apache Security team has released a security advisory for CVE-2021-44228 which affects Apache Log4j2. A malicious user could exploit this vulnerability to run arbitrary code as the user or service account running the affected software. Software products using log4j versions 2.0 through 2.14.1 are affected and log4j 1.x is not affected. Cloudera is making short-term workarounds available for affected software and is in the process of creating new releases containing fixes for this CVE.

Short Term Resolution

Remediation steps are outlined in the [TSB-545 documentation](#).

Be aware that the following actions are pulling the vulnerable jar files back in action again:

- Scaling up cluster (adding a host to Cloudera Manager or the cluster)
- Redistributing the CDH parcels
- Reinstalling the Cloudera Manager packages

Long Term Resolution - installation of patched version on CDH and Cloudera Manager

Please follow the following instructions for upgrading:

- [Cloudera Manager](#)
- [CDH](#)

Please deactivate then remove the vulnerable parcels using this [documentation](#). No action needed on the OS packages as they will be replaced during the upgrade procedure.

Patches are available for the following GA versions of Cloudera Enterprise

- Cloudera Manager 6.3.3
- Cloudera Manager 6.3.4
- CDH 6.3.4
- CDH 6.3.3

CDH 6.3.x Release Notes

To view release notes for specific CDH 6.3.x releases, see the following:

CDH 6.3.4 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for CDH 6.3.4:

New Features in CDH 6.3.4

This is a maintenance release that fixes some important issues. For details, see [Fixed Issues in CDH 6.3.4](#).

Installation and Upgrade Changes

Installation or Upgrade of Cloudera Manager and CDH requires authentication to access downloads

Beginning with Cloudera Manager and CDH 6.3.3, downloading new versions of these products will require a valid Cloudera Enterprise license file, and/or a username and password obtained from Cloudera. All Cloudera Manager package, CDH parcel and CDH package repositories require authentication with valid credentials to access any version numbered 6.3.3 or later. For more information on using these credentials, see the documentation below.

See:

- [Cloudera Manager Upgrade Guide](#)
- [CDH Upgrade Guide](#)
- [Cloudera Installation Guide](#)

Cloudera Express has been discontinued

Beginning with CDH 6.3.3 (and CDP Data Center 7.0), Cloudera Express is no longer available. Upgrades to Cloudera Manager or CDH 6.3.3 and higher are not supported when running Cloudera Express. A valid Cloudera Enterprise or CDP Data Center license must be in place before upgrading to Cloudera Manager 6.3.3 or 7.x or the upgrade will not be completed.

Downgrading from Cloudera Enterprise license to Cloudera Express license is also no longer supported in Cloudera Manager 6.3.3 and higher.



Note: An expired Cloudera Enterprise or CDP license, or an expired trial license will disable the Cloudera Manager Admin Console until a valid license key is provided.

Fixed Issues in CDH 6.3.4

CDH 6.3.4 fixes the following issues:

High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls

Issuing DDL statements using Hue's Impala editor or invoking Hue's "Refresh Cache" function in the left-side metadata browser results in Hue issuing INVALIDATE METADATA calls to the Impala service. This call is expensive and can result in a significant system impact, up to and including full system outage, when repeated in sufficient volume. This has been corrected in HUE-8882.

Components affected:

- Hue
- Impala

Products affected:

- Cloudera Enterprise 5
- Cloudera Enterprise 6

Releases affected:

- CDH 5.15.1, 5.15.2
- CDH 5.16.x
- CDH 6.1.1
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: End-users using Impala editor in Hue.

Severity: High

Impact: Users running DDL statements using the Hue Impala editor or invoking Hue's Refresh Cache function causes INVALIDATE METADATA commands to be sent to Impala. Impala's metadata invalidation is an expensive operation and could cause impact on the performance of subsequent queries, hence leading to the potential for significant impact on the entire cluster, including the potential for whole-system outage.

Action required:

- CDH 6.x customers: Upgrade to CDH 6.3.4 that contains the fix.
- CDH 5.x customers: Contact Cloudera Support for further assistance.

Apache issue: [HUE-8882](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls](#)

Default limits for PressureAwareCompactionThroughputController are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP
- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4
- **Workaround:**
 - Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
 - An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement

DDL and DML operations can accumulate in the Kudu tablet replica's write ahead log (WAL) during normal operation. Upon the shutdown of a tablet replica (for example, right before removing the replica), information on the accumulated operations (first 50) are printed into the tablet server's INFO log file.

A bug was introduced with the fix for KUDU-2690. The code contains a flipped if-condition that results in de-referencing of an invalid pointer while reporting on a pending ALTER TABLE operation in the tablet replica's WAL. The issue manifests itself in kudu-tserver processes crashing with SIGSEGV (segmentation fault).

The occurrence of the issue is limited to scenarios which result in accumulating at least one pending ALTER TABLE operation in the tablet replica's WAL at the time when the tablet replica is shut down. An example scenario is an ALTER TABLE request (for example, adding a column) immediately followed by a request to drop a tablet (for example, drop a range partition). Another example scenario is shutting down a tablet server while it's still processing an ALTER TABLE request for one of its tablet replicas. A slowness in file system operations increases the chances for the issue to manifest itself.

Apache issue: [KUDU-2690](#)

Component affected: Kudu

Products affected: CDH

Releases affected:

- CDH 6.2.0, 6.2.1
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Kudu clusters with the impacted releases.

Impact: In the worst case, multiple kudu-tserver processes can crash in a Kudu cluster, making data unavailable until the affected tablet servers are started back.

Severity: High

Action required:

- **Workaround:** Avoid dropping range partitions and tablets right after issuing ALTER TABLE request. Wait for the pending ALTER TABLE requests to complete before dropping tablets or shutting down tablet servers.
- **Solution:** Upgrade to CDH 6.3.4 or CDP

Knowledge article: For the latest update on this issue see the corresponding Knowledge article:

[TSB 2020-449: Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement](#)

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
java.lang.NullPointerException at
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler
- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

Upstream Issues Fixed

The following upstream issues are fixed in CDH 6.3.4:

Apache Accumulo

There are no notable fixed issues in this release.

Apache Avro

The following issues are fixed in CDH 6.3.4:

- Dependency upgrade: org.codehaus.plexus:plexus-utils:1.5.6 to org.codehaus.plexus:plexus-utils:3.3.0 due to CVE-2017-1000487 (fixed in [AVRO-2710](#) and [AVRO-2865](#)).
- Dependency upgrade: Tukaani upgraded to version 1.8 due to CVE.

Apache Crunch

There are no notable fixed issues in this release.

Apache Flume

There are no notable fixed issues in this release.

Apache Hadoop

The following issues are fixed in CDH 6.3.4:

- [HADOOP-14154](#) - Persist isAuthoritative bit in Dynamo DB MetaStore.
- [HADOOP-14734](#) - Add an option to tag the created Dynamo DB tables.
- [HADOOP-14833](#) - Remove s3a user:secret authentication.
- [HADOOP-15168](#) - Add kdiag tool to the hadoop command.
- [HADOOP-15281](#) - Distcp to add no-rename copy option.
- [HADOOP-15370](#) - S3A log message on rm s3a://bucket/ not intuitive
- [HADOOP-15426](#) - Make s3guard client resilient to Dynamo DB throttle events and network failures.
- [HADOOP-15428](#) - The s3guard bucket-info command creates the s3guard table if FS is set to do this automatically.
- [HADOOP-15495](#) - Upgrade commons-lang version to 3.7 in hadoop-common-project and hadoop-tools.
- [HADOOP-15552](#) - Move logging APIs over to slf4j in hadoop-tools.
- [HADOOP-15583](#) - Stabilize S3A Assumed Role support.
- [HADOOP-15621](#) - S3Guard: Implement time-based (TTL) expiry for Authoritative Directory Listing.
- [HADOOP-15635](#) - The s3guard set-capacity command to fail if the bucket is unguarded.
- [HADOOP-15642](#) - Update aws-sdk version to 1.11.375.
- [HADOOP-15709](#) - Move the s3Guard LocalMetadataStore constants to org.apache.hadoop.fs.s3a.Constants.
- [HADOOP-15729](#) - [s3a] Allow core threads to time out.
- [HADOOP-15837](#) - DynamoDB table Update can fail s3a filesystem initialization.
- [HADOOP-15843](#) - The s3guard bucket-info command to not print a stack trace on bucket-not-found.
- [HADOOP-15845](#) - Require explicit URI on CLI for the s3guard init and destroy commands.
- [HADOOP-15882](#) - Upgrade maven-shade-plugin from 2.4.3 to 3.2.0.
- [HADOOP-15926](#) - Document upgrading the section in NOTICE.txt when upgrading the version of AWS SDK.
- [HADOOP-15932](#) - Oozie unable to create sharelib in the s3a filesystem.
- [HADOOP-15970](#) - Upgrade plexus-utils from 2.0.5 to 3.1.0.

- [HADOOP-15988](#) - DynamoDBMetadataStore#innerGet should support empty directory flag when using authoritative listings.
- [HADOOP-15999](#) - S3Guard: Better support for out-of-band operations.
- [HADOOP-16093](#) - Move DurationInfo from hadoop-aws to hadoop-common org.apache.hadoop.util.
- [HADOOP-16117](#) - Update AWS SDK to 1.11.563.
- [HADOOP-16124](#) - Extend documentation in testing.md about S3 endpoint constants.
- [HADOOP-16201](#) - S3AFileSystem#innerMkdirs builds needless lists
- [HADOOP-16278](#) - With the s3a filesystem, long running services perform a lot of garbage collection and eventually crash.
- [HADOOP-16385](#) - Namenode crashes with 'RedundancyMonitor thread received Runtime exception'.
- [HADOOP-16393](#) - The s3guard init command uses global settings and not those of the target bucket.
- [HADOOP-16580](#) - Disable retry of FailoverOnNetworkExceptionRetry in case of AccessControlException
- [HADOOP-16683](#) - Disable retry of FailoverOnNetworkExceptionRetry in case of wrapped AccessControlException
- [HADOOP-17068](#) - The client fails when the NameNode address is changed.
- [HADOOP-17209](#) - Fix to the erasure coding native library memory leak.

HDFS

The following issues are fixed in CDH 6.3.4:

- [HDFS-10659](#) - NameNode crashes after JournalNode re-installation in an HA cluster due to missing paxos directory.
- [HDFS-12339](#) - NFS Gateway on shutdown gives unregistration failure.
- [HDFS-12748](#) - NameNode memory leak when accessing the webhdfs GETHOMEDIRECTORY.
- [HDFS-12914](#) - Block report leases cause missing blocks until next report.
- [HDFS-13101](#) - An fsimage corruption issue related to snapshots.
- [HDFS-14218](#) - The hdfs dfs -ls -e command fails with an exception when the directory erasure coding policy is disabled
- [HDFS-14274](#) - Exception when listing for a directory that its EC policy set as replicate.
- [HDFS-14535](#) - The default 8KB buffer in requestFileDescriptors#BufferedOutputStream is causing lots of heap allocation in HBase when using short-circuit read
- [HDFS-14668](#) - Support Fuse with users from multiple security realms.
- [HDFS-14699](#) - Erasure Coding: Storage not considered in live replica when the replication streams hard limit is reached.
- [HDFS-14754](#) - Erasure Coding: The number of under replicated blocks does not reduce.
- [HDFS-14847](#) - Erasure Coding: Blocks are over-replicated when EC is decommissioning.
- [HDFS-14849](#) - Erasure Coding: The internal block is replicated many times when the DataNode is decommissioning
- [HDFS-14920](#) - Erasure Coding: Decommission might get stuck if one or more DataNodes are out of service.
- [HDFS-14946](#) - Erasure Coding: Block recovery fails during decommissioning.
- [HDFS-15012](#) - NameNode fails to parse edit logs after applying HDFS-13101.
- [HDFS-15186](#) - Erasure Coding: Decommission might generate the parity block's content with all 0s in some cases.
- [HDFS-15313](#) - Ensure that inodes in the active filesystem are not deleted during a snapshot delete operation.
- [HDFS-15372](#) - Files in snapshots no longer see attribute provider permissions.
- [HDFS-15386](#) - The ReplicaNotFoundException is observed after removing the data directories of multiple DataNodes.
- [HDFS-15446](#) - Snapshot creation fails during edit log loading for /.reserved/raw/path with java.io.FileNotFoundException: Directory does not exist: /.reserved/raw/path.

MapReduce 2

The following issues are fixed in CDH 6.3.4:

- [MAPREDUCE-7240](#) - Fix Invalid event: TA_TOO_MANY_FETCH_FAILURE at SUCCESS_FINISHING_CONTAINER.
- [MAPREDUCE-7249](#) - Fix Invalid event TA_TOO_MANY_FETCH_FAILURE at SUCCESS_CONTAINER_CLEANUP causes job failure.
- [MAPREDUCE-7273](#) - Fixed Job History server token renewal.

- [MAPREDUCE-7278](#) - Speculative execution behavior is observed even when `mapreduce.map.speculative` and `mapreduce.reduce.speculative` are false

YARN

The following issues are fixed in CDH 6.3.4:

- [YARN-5714](#) - ContainerExecutor does not order environment map
- [YARN-7818](#) - COMPX-2568: Remove privileged operation warnings during container launch for the ContainerRuntimes
- [YARN-7913](#) - Improve error handling when application recovery fails with exception
- [YARN-7962](#) - Race Condition When Stopping DelegationTokenRenewer causes RM crash during failover.
- [YARN-8242](#) - YARN NM: OOM error while reading back the state store on recovery
- [YARN-8373](#) - RM Received RMFatalEvent of type CRITICAL_THREAD_CRASH
- [YARN-8751](#) - Reduce conditions that mark node manager as unhealthy.
- [YARN-9639](#) - DecommissioningNodesWatcher cause memory leak
- [YARN-9984](#) - FSPreemptionThread can cause NullPointerException while app is unregistered with containers running on a node
- [YARN-10107](#) - Fix GpuResourcePlugin#getNMResourceInfo to honor Auto Discovery Enabled
- [YARN-10286](#) - PendingContainers bugs in the scheduler outputs

Apache HBase

The following issues are fixed in CDH 6.3.4:

- [HBASE-7191](#) - HBCK - Add offline create/fix `hbase.version` and `hbase.id`
- [HBASE-22403](#) - Balance in RSGroup should consider throttling and a failure affects the whole
- [HBASE-22527](#) - [hbck2] Add a master web ui to show the problematic regions
- [HBASE-22709](#) - Add a chore thread in master to do hbck checking
- [HBASE-22737](#) - Add a new admin method and shell cmd to trigger the hbck chore to run
- [HBASE-22741](#) - Show catalogjanitor consistency complaints in new 'HBCK Report' page
- [HBASE-22771](#) - [HBCK2] fixMeta method and server-side support
- [HBASE-22777](#) - Add a multi-region merge
- [HBASE-22796](#) - [HBCK2] Add fix of overlaps to fixMeta hbck Service
- [HBASE-22803](#) - Modify config value range to enable turning off of the hbck chore
- [HBASE-22807](#) - HBCK Report showed wrong orphans regions on FileSystem
- [HBASE-22808](#) - HBCK Report showed the offline regions which belong to disabled table
- [HBASE-22824](#) - Show filesystem path for the orphans regions on filesystem
- [HBASE-22827](#) - Expose multi-region merge in shell and Admin API
- [HBASE-22859](#) - [HBCK2] Fix the orphan regions on filesystem
- [HBASE-22970](#) - split parents show as overlaps in the HBCK Report
- [HBASE-23014](#) - Should not show split parent regions in hbck report UI
- [HBASE-23044](#) - CatalogJanitor#cleanMergeQualifier may clean wrong parent regions
- [HBASE-23153](#) - PrimaryRegionCountSkewCostFunction SLB function should implement CostFunction#isNeeded
- [HBASE-23175](#) - Yarn unable to acquire delegation token for HBase Spark jobs
- [HBASE-23192](#) - CatalogJanitor consistencyCheck does not log problematic row on exception
- [HBASE-23247](#) - [hbck2] Schedule SCPs for 'Unknown Servers'
- [HBASE-24139](#) - Balancer should avoid leaving idle region servers
- [HBASE-24273](#) - HBCK's "Orphan Regions on FileSystem" reports regions with referenced HFiles (#1613)
- [HBASE-24794](#) - `hbase.rowlock.wait.duration` should not be less than or equal to 0

Apache Hive

The following issues are fixed in CDH 6.3.4:

- [HIVE-15211](#) - Provide support for complex expressions in ON clauses for INNER joins

- [HIVE-15251](#) - Provide support for complex expressions in ON clauses for OUTER joins
- [HIVE-15369](#) - Extend column pruner to account for residual filter expression in Join operator
- [HIVE-15370](#) - Include Join residual filter expressions in user level EXPLAIN
- [HIVE-15388](#) - HiveParser spends lots of time in parsing queries with lots of "("
- [HIVE-15578](#) - Simplify IdentifiersParser
- [HIVE-16683](#) - ORC WriterVersion gets ArrayIndexOutOfBoundsException on newer ORC files
- [HIVE-16907](#) - "INSERT INTO" overwrite old data when destination table encapsulated by backquote
- [HIVE-18390](#) - IndexOutOfBoundsException when query a partitioned view in ColumnPruner
- [HIVE-18624](#) - Parsing time is extremely high (~10 min) for queries with complex select expressions
- [HIVE-19631](#) - Reduce epic locking in AbstractService
- [HIVE-19799](#) - Remove jasper dependency
- [HIVE-20051](#) - Skip authorization for temp tables
- [HIVE-20621](#) - GetOperationStatus called in resultset.next causing incremental slowness
- [HIVE-21377](#) - Using Oracle as HMS DB with DirectSQL
- [HIVE-22416](#) - MR-related operation logs missing when parallel execution is enabled
- [HIVE-22513](#) - Constant propagation of casted column in filter ops can cause incorrect results
- [HIVE-22713](#) - Constant propagation shouldn't be done for Join-Fil(*)-RS structure
- [HIVE-22741](#) - Speed up ObjectStore method getTableMeta
- [HIVE-22772](#) - Log opType and session level information for each operation
- [HIVE-22889](#) - Trim trailing and leading quotes for HCatCli query processing
- [HIVE-22931](#) - HoS dynamic partitioning fails with blobstore optimizations off
- [HIVE-23306](#) - Backportand HIVE-22901: RESET command does not work if there is a config set by System.getProperty
- [HIVE-23868](#) - BackportWindowing function spec: support 0 preceding/following

Hue

The following issues are fixed in CDH 6.3.4:

- [HUE-7474](#) - [impala] Log query plan only in debug mode
- [HUE-8882](#) - [editor] Replace invalidate on DDL with clearCache
- [HUE-8882](#) - [impala] Fix invalidate delta when hive is missing.
- [HUE-8882](#) - [impala] Fix invalidate delta when hive is missing
- [HUE-8882](#) - [impala] Fix get_hive_metastore_interpreters filtering
- [HUE-8882](#) - [tb] Improve invalidate logic when refreshing missing tables in the table browser
- [HUE-8980](#) - [jb] Fix coordinator cannot sync with saved documents
- [HUE-9070](#) - [editor] Integrate primary keys info in the interface
- [HUE-9070](#) - [editor] API for retrieving Table Primary Keys
- [HUE-9080](#) - [editor] PK icons are now missing in Kudu tables
- [HUE-9080](#) - [impala] Workaround missing PK information in table description
- [HUE-9180](#) - [useradmin] Convert LDAP names to unicode to reduce length
- [HUE-9212](#) - [core] Fix missing login-modal causes auto logout failed
- [HUE-9250](#) - [useradmin] Prevent login failed due to user.last_login is None type
- [HUE-9273](#) - [notebook] Encoding Error when use non-ascii characters in sql-editor-variables

Apache Impala

The following issues are fixed in CDH 6.3.4:

- [IMPALA-4551](#) - Limit the size of SQL statements
- [IMPALA-6159](#) - DataStreamSender should transparently handle some connection reset by peer
- [IMPALA-6503](#) - Support reading complex types from ORC
- [IMPALA-6772](#) - Enable test_scanners_fuzz for ORC
- [IMPALA-6772](#) - Bump ORC version to 1.6.2-p6
- [IMPALA-7604](#) - part 1: tests for agg cardinality

- [IMPALA-7604](#) - part 2: fixes for AggregationNode cardinality
- [IMPALA-7802](#) - Implement support for closing idle sessions
- [IMPALA-7957](#) - Fix slot equivalences may be enforced multiple times
- [IMPALA-8184](#) - Add timestamp validation to ORC scanner
- [IMPALA-8254](#) - Fix error when running compute stats with compression_codec set
- [IMPALA-8557](#) - Add '.txt' to text files, remove '.' at end of filenames
- [IMPALA-8595](#) - THRIFT-3505 breaks IMPALA-5775
- [IMPALA-8612](#) - NPE when DropTableOrViewStmt analysis leaves serverName_ NULL
- [IMPALA-8634](#) - Catalog client should retry RPCs
- [IMPALA-8673](#) - Add query option to force plan hints for insert queries
- [IMPALA-8718](#) - project out collection slots in analytic's sort tuple
- [IMPALA-8748](#) - Must pass hostname to RpcMgr::GetProxy()
- [IMPALA-8790](#) - IllegalStateException: Illegal reference to non-materialized slot
- [IMPALA-8797](#) - Support database and table blacklist
- [IMPALA-8851](#) - Drop table if exists throws authorization exception when table does not exist
- [IMPALA-8890](#) - Advance read page in UnpinStream
- [IMPALA-8912](#) - Avoid sampling hbase table twice for HBaseScanNode
- [IMPALA-8913](#) - Add query option to disable hbase row estimation
- [IMPALA-8923](#) - remove synchronized in HBaseTable.getEstimatedRowStats
- [IMPALA-8969](#) - Grouping aggregator can cause segmentation fault when doing multiple aggregations
- [IMPALA-9002](#) - Add flag to only check SELECT privilege in GET_TABLES
- [IMPALA-9116](#) - KUDU-2989. Work around SASL bug when FQDN is >=64 characters
- [IMPALA-9136](#) - Table.getUniqueName() reimplemented not to use table lock
- [IMPALA-9162](#) - Incorrect redundant predicate applied to outer join
- [IMPALA-9231](#) - Use simplified privilege checks for show databases
- [IMPALA-9249](#) - Fix ORC scanner crash when root type is not struct
- [IMPALA-9272](#) - Fix PlannerTest.testHdfs depending on year(now())
- [IMPALA-9277](#) - Catch exception thrown from orc::ColumnSelector::updateSelectedById
- [IMPALA-9324](#) - Correctly handle ORC UNION type in scanner
- [IMPALA-9549](#) - Handle catalogd startup delays when using local catalog
- [IMPALA-9707](#) - fix Parquet stat filtering when min/max values are cast to NULL
- [IMPALA-9809](#) - Multi-aggregation query on particular dataset crashes impalad
- [IMPALA-10005](#) - Fix Snappy decompression for non-block filesystems
- [IMPALA-10103](#) - upgrade jquery to 3.5.1

Apache Kafka

The following issues are fixed in CDH 6.3.4:

- [KAFKA-9254](#) - Overridden topic configs are reset after dynamic default change
- [KAFKA-9839](#) - IllegalStateException on metadata update when broker learns about its new epoch after the controller

Kite SDK

There are no notable fixed issues in this release.

Apache Kudu

The following issues are fixed in CDH 6.3.4:

- [KUDU-2635](#) - ignore failures to delete orphaned blocks
- [KUDU-2727](#) - [consensus]lock-free CheckLeadershipAndBindTerm()
- [KUDU-2836](#) - Release memory to OS periodically
- [KUDU-2929](#) - don't do nothing when under memory pressure
- [KUDU-2947](#) - [consensus]fix voting in case of slow WAL

- [KUDU-2977](#) - Sharding block map to speed up tserver startup
- [KUDU-2987](#) - Intra location rebalance crashes in special case.
- [KUDU-2992](#) - Avoid sending duplicated requests in catalog_manager
- [KUDU-3002](#) - prioritize WAL unanchoring when under memory pressure
- [KUDU-3001](#) - Multi-thread to load containers in a data directory
- [KUDU-3023](#) - [tablet]validate RPC vs transaction size limit
- [KUDU-3035](#) - [java]Pass last propagated timestamp in Batch
- [KUDU-3036](#) - [master]reject DDLs which would lead to DoS
- [KUDU-3099](#) - Remove System.exit() calls from KuduBackup/KuduRestore
- [KUDU-3106](#) - [security]update on getEndpointChannelBindings()

Apache Oozie

The following issues are fixed in CDH 6.3.4:

- [OOZIE-1624](#) - Exclusion pattern for sharelib JARs
- [OOZIE-3544](#) - Upgrade commons-beanutils to 1.9.4
- [OOZIE-3549](#) - Add back support for truststore passwords
- [OOZIE-3561](#) - Forkjoin validation is slow when there are many actions in chain
- [OOZIE-3578](#) - MapReduce counters cannot be used over 120
- [OOZIE-3592](#) - Do not print misleading SecurityException for successful jobs
- [OOZIE-3584](#) - Fork-join action issue when action param cannot be resolved
- Removed one of the 2 conflicting logging libraries from one part of oozie, removing a blocker for Apache Spark customers who use Spark through Oozie.
- CWE-693 Protection mechanism failure

Apache Parquet

There are no notable fixed issues in this release.

Apache Phoenix

There are no notable fixed issues in this release.

Apache Pig

The following issue is fixed in CDH 6.3.4:

- [PIG-5395](#) - Pig build is failing due to maven repo access point change

Apache Solr/Cloudera Search

The following issues are fixed in CDH 6.3.4:

- [SOLR-6117](#) - Unify ReplicationHandler error handling
- [SOLR-11676](#) - Fix a SolrJ test to not expect replicationFactor that is not being set anymore
- [SOLR-11676](#) - Keep nrtReplicas and replicationFactor in sync while creating a collection and modifying a collection
- [SOLR-11807](#) - Simply testing of createNodeSet with restoring collection and fixing the test failure
- [SOLR-11807](#) - Restoring collection now treats maxShardsPerNode=-1 as unlimited
- [SOLR-11807](#) - Test code didn't take into account changing maxShardsPerNode for one code path
- [SOLR-12489](#) - User specified replicationFactor and maxShardsPerNode is used when specified during a restore operation.
- [SOLR-12489](#) - Fix test failures
- [SOLR-12489](#) - remove unused imports
- [SOLR-12617](#) - Remove Commons BeanUtils as a dependency
- [SOLR-13779](#) - Use the safe fork of simple-xml for clustering contrib

Apache Sentry

The following issue is fixed in CDH 6.3.4:

- [SENTRY-2557](#): Queries are running too slow when there are a huge number of roles and permissions granted to them.

Apache Spark

The following issues are fixed in CDH 6.3.4:

- [SPARK-25903](#) - [CORE] TimerTask should be synchronized on ContextBarrierState
- [SPARK-26989](#) - [CORE][TEST][2.4] DAGSchedulerSuite: ensure listeners are fully processed before checking recorded values
- [SPARK-27494](#) - [SS] Null values don't work in Kafka source v2
- [SPARK-28005](#) - [YARN] Remove unnecessary log from SparkRackResolver
- [SPARK-30238](#) - [SQL] hive partition pruning can only support string and integral types
- [SPARK-31559](#) - [YARN] Re-obtain tokens at the startup of AM for yarn cluster mode if principal and keytab are available
- [SPARK-32003](#) - [CORE][2.4] When external shuffle service is used, unregister outputs for executor on fetch failure after executor is lost

Apache Sqoop

There are no notable fixed issues in this release.

Apache ZooKeeper

There are no notable fixed issues in this release.

Unsupported Features in CDH 6.3.4

This page lists the unsupported features in CDH 6.3.x. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.3.4](#) on page 415.

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 378
- [YARN Unsupported Features](#) on page 378

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.3.x:

- ACLs for the NFS gateway ([HADOOP-11004](#))
- Aliyun Cloud Connector ([HADOOP-12756](#))
- Allow HDFS block replicas to be provided by an external storage system ([HDFS-9806](#))
- Consistent standby Serving reads ([HDFS-12943](#))
- HDFS Router Based Federation ([HDFS-10467](#))
- More than two NameNodes ([HDFS-6440](#))
- NameNode Federation ([HDFS-1052](#))
- OpenStack Swift ([HADOOP-8545](#))
- SFTP FileSystem ([HADOOP-5732](#))
- Storage policy satisfier ([HDFS-10285](#))
- Upgrade Domain ([HDFS-7541](#))

YARN Unsupported Features

The following YARN features are not supported in CDH 6.3.x:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers

- Distributed Scheduling
- Docker on YARN (DockerContainerExecutor)
- Native Services
- New Aggregated Log File Format
- Node Labels
- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Estimator Service
- Resource Profiles
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.3.x:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction
- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation
- Client tarball
- Rolling upgrade from CDH 5 HBase versions

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.3.x:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution
- Hive Metastore - Derby
- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))

- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka features are not supported in CDH 6.3.x:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.
- Kafka Connect is included in CDH 6.3.x, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.3.x, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.3.x:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Phoenix Unsupported Features

The following Apache Phoenix features are not supported in the Apache Phoenix 5.0.0 parcel on CDH 6.3.4:

- Pig, Flume, Kafka, and MapReduce integration.
- Multi-row and cross-table transaction support.
- JDK 11 is currently not supported; you must use JDK 8.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.3.x:

- Pig on Tez is not supported in CDH 6.1.x ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.3.x:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.3.x:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

([Known Issue](#))

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.x, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.3.x:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)
- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is supported, but the following features of it *are not*:
 - Continuous processing, which is still experimental, is not supported
 - Stream static joins with HBase have not been tested and therefore are not supported
- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.3.x:

- `import-mainframe`

Cloudera Connector for Netezza

Cloudera Connector for Netezza is not supported in CDH 6.3.x

Incompatible Changes in CDH 6.3.4



Important:

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.3.4 grouped by component:

Apache Accumulo

CDH 6.3.4 introduces no new incompatible changes for Apache Accumulo.

Apache Avro

CDH 6.3.4 introduces no new incompatible changes for Apache Avro.

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires GenericEnumSymbol - likely to break current Generic API users that often have String or Java Enum for these fields
- [AVRO-1502](#): Avro Objects now Serializable - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be HTrace
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.
- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).
- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

CDH 6.3.4 introduces no new incompatible changes for Apache Flume.

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. The only additional configuration required to use HBase2Sink is to replace the component name in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

com.google.common.collect.ImmutableMap

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those

methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

CDH 6.3.4 introduces no new incompatible changes for Apache Hadoop.

- [HDFS](#) on page 383
- [MapReduce](#) on page 384
- [YARN](#) on page 384

HDFS

CDH 6.0.0, introduced the following incompatible changes for HDFS:

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.
- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSClient#mkdirs` and `DFSClient#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.
- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.
 - All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.
- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0

- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.
- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0
 - asm from 3.2 to 5.0.4

MapReduce

CDH 6.0.0, introduced the following incompatible changes:

- Support for MapReduce v1 has been dropped from CDH 6.0.0.
- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

CDH 6.3.4 introduces no new incompatible changes for Apache YARN.

Apache HBase

CDH 6.3.4 introduces no new incompatible changes for Apache HBase.

Apache Hive/Hive on Spark/HCatalog

CDH 6.3.4 requires upgrades of Jackson and Xerces; otherwise, CDH 6.3.4 introduces no new incompatible changes for Apache Hive/Hive on Spark/HCatalog.

Apache Hive

The following changes are introduced to Hive in CDH 6.0.0, and are not backwards compatible:

- [UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting](#) on page 1248
- [Support for UNION DISTINCT](#) on page 1249
- [OFFLINE and NO_DROP Options Removed from Table and Partition DDL](#) on page 1250
- [DESCRIBE Query Syntax Change](#) on page 1250
- [CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names](#) on page 1250
- [Reserved and Non-Reserved Keyword Changes in HiveQL](#) on page 1250
- [Apache Hive API Changes in CDH 6.0.0](#) on page 1252
- [Apache Hive Configuration Changes in CDH 6.0.0](#) on page 1253
- [HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes](#) on page 1256
- [Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column](#) on page 1256
- [Hive Logging Framework Switched to SLF4J/Log4j 2](#) on page 1256
- [Deprecated Parquet Java Classes Removed from Hive](#) on page 1256
- [Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms](#) on page 1257
- [S3N Connector Is Removed from CDH 6.0](#) on page 1257
- [Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request](#) on page 1257
- [Support Added for Escaping Carriage Returns and New Line Characters for Text Files \(LazySimpleSerDe\)](#) on page 1258

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1258

Changing Table File Format from ORC with the ALTER TABLE Command Not Supported in CDH 6

Changing the table file format from ORC to another file format with the ALTER TABLE command is not supported in CDH 6 (it returns an error).

UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting

Prior to this change, Hive performed implicit casts when data types from different type groups were specified in queries that use UNION ALL. For example, before CDH 6.0, if you had the two following tables:

Table "one"

| one.col_1 | one.col_2 | one.col_3 |
|-----------|-----------|-----------|
| 21 | hello_all | b |

Where col_1 datatype is int, col_2 datatype is string, and col_3 datatype is char(1).

Table "two"

| two.col_4 | two.col_5 | two.col_6 |
|-----------|-----------|-----------|
| 75.0 | abcde | 45 |

Where col_4 datatype is double, col_5 datatype is varchar(5), and col_6 datatype is int.

And you ran the following UNION ALL query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS col_3 FROM two;
```

You received the following result set:

| _u1.col_1 | _u1.col_2 | _u1.col_3 |
|-----------|-----------|-----------|
| 75.0 | abcde | 4 |
| 21.0 | hello | b |

Note that this statement implicitly casts the values from table one with the following errors resulting in data loss:

- one.col_1 is cast to a double datatype
- one.col_2 is cast to a varchar(5) datatype, which truncates the original value from hello_all to hello
- one.col_3 is cast to a char(1) datatype, which truncates the original value from 45 to 4

In CDH 6.0, no implicit cast is performed across different type groups. For example, STRING, CHAR, and VARCHAR are in one type group, and INT, BIGINT, and DECIMAL are in another type group, and so on. So, in CDH 6.0 and later, the above query that uses UNION ALL, returns an exception for the columns that contain datatypes that are not part of a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
 - The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.
- **Behavior in CDH 6:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
 - The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:
 - `ENABLE | DISABLE NO_DROP [CASCADE]`
 - `ENABLE | DISABLE OFFLINE`
 - `ALTER TABLE ... IGNORE PROTECTION`
- The following support has also been removed from the `HiveMetastoreClient` class:
The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, `data`). *Non-reserved keywords* can be used as table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|---------|------------|------------|----------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |
| START | | | |

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|----------|----------|-----------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |
| BOOLEAN | BOTH | BY | CREATE |
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |

| | | | |
|-----------|----------|-----------|-----------|
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|--------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLTIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|---------------|---------|-------------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |
| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252
- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a `CLOB` data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like "=", "<>", and "!=" might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with `CLOB` data types. There is no equivalent "<>" operator that is compatible with `CLOB`. So there is no equivalent operator for the above example that uses the "<>" inequality operator. The equivalent for "=" is the `LIKE` operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253

- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(hive.server2.enable.impersonation\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.
3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned table but do not filter on the partition column. | <code>false</code> |
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)
- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (hive.server2.enable.impersonation) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`
 - **Description:** Sets the file format in which a query's intermediate results are stored.
3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:


```
org.apache.hive.service.cli.thrift
```

 To the following *new* namespace:


```
org.apache.hive.service.rpc.thrift
```
- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale of 5, the value returned for zero was returned as 0. *Now*, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the `INPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat` and set the `OUTPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`
- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanup(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|---|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |
| REF_GENERATION | Specifies how values in the SELF_REFERENCING_COL_NAME column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the SerDe property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, 'r' or 'n' cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the `LazySerDeParameters` class. For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

CDH 6.3.4 introduces no new incompatible changes for Hue.

Apache Impala

CDH 6.3.4 introduces no new incompatible changes for Apache Impala.

Apache Kafka

Incompatible Changes Introduced in CDH 6.3.4

CDH 6.3.4 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.3.3

CDH 6.3.3 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.3.2

CDH 6.3.2 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.3.1

CDH 6.3.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.3.0

Default Consumer Group ID Change

The default consumer group ID has been changed from the empty string (`" "`) to `null`. Consumers that use the new default group ID will not be able to subscribe to topics, and fetch or commit offsets. The empty string as consumer group ID is deprecated but will be supported until a future major release. Old clients that rely on the empty string group id will now have to explicitly provide it as part of their consumer configuration. For more information, see [KIP-289](#).

Incompatible Changes Introduced in CDH 6.2.1

CDH 6.2.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.2.0



Warning: Kafka in CDH 6.2.0 is based on Apache Kafka 2.1.0, which contains a change to the internal schema used to store consumer offsets. As a result of this change, downgrading Kafka to a version lower than CDH 6.2.0 is **NOT** possible once Kafka has been upgraded to CDH 6.2.0 or higher.

Default Behaviour Changes

Kafka CDH 6.2.0. Introduces the following default behaviour changes:

- Unclean leader election is automatically enabled by the controller when `unclean.leader.election.enable` config is dynamically updated by using per-topic config override.
- Diagnostic data bundles collected by Cloudera Manager from now on include information on Kafka topics. The bundle includes the information exposed by the following two commands:
 - `kafka-topics --describe`
 - `kafka-topics --list`

Incompatible Changes Introduced in CDH 6.1.1

CDH 6.1.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.1.0

Scala-based Client API Removed

Scala-based clients were deprecated in a previous release and are removed as of CDH 6.1.0.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are effected:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Default Behaviour Change

[KAFKA-7050](#): The default value for `request.timeout.ms` is decreased to 30 seconds. In addition, a new logic is added that makes the `JoinGroup` requests ignore this timeout.

Incompatible Changes Introduced in CDH 6.0.1

CDH 6.0.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.0.0

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes

affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see the previous entry). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`
- `kafka.tools.ExportZkOffset`
- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- `GroupCoordinatorNotAvailableException`
- `GroupLoadInProgressException`

- `NotCoordinatorForGroupException`
- `kafka.common.KafkaStorageException`

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Kite SDK

CDH 6.3.4 introduces no new incompatible changes for Kite SDK.

Apache Kudu

CDH 6.3.4 introduces no new incompatible changes for Apache Kudu.

Apache Oozie

CDH 6.3.4 introduces no new incompatible changes for Apache Oozie.

Apache Parquet

CDH 6.3.4 introduces no new incompatible changes for Apache Parquet.

Packages and Group ID Renamed

As a part of the Apache incubation process, all Parquet packages and the project's group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|-----------------------------------|
| Java Package Names | <code>parquet.*</code> | <code>org.apache.parquet.*</code> |
| Group ID | <code>com.twitter</code> | <code>org.apache.parquet</code> |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update *.java files:

| Before | After |
|---|--|
| <code>import parquet. * ;</code> | <code>import org.apache.parquet. * ;</code> |

Update pom.xml:

| Before | After |
|---|--|
| <pre> <dependency> <groupId> com.twitter </groupId> <version> \${parquet.version} </version> </dependency> </pre> | <pre> <dependency> <groupId> org.apache.parquet </groupId> <version> \${parquet.version} </version> </dependency> </pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestedSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestedSchema</code> |

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Phoenix

CDH 6.3.4 introduces no new incompatible changes for Apache Phoenix.

Apache Pig

CDH 6.3.4 introduces no new incompatible changes for Apache Pig.

Incompatible Changes Introduced in CDH 6.0.0

The following change is introduced to Pig in CDH 6.0 and is not a backwards compatible change. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0 JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 34: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|--|---------------------------------|---------|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|---|
| VAR (stats) | Generates the variance of a set of values. | variance | None |
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 399. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 399. |
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way to filter using a logical disjunction over many values. | IN | None |

For more information about using Hive UDFs, see

https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 35: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|------------------------------------|----------|------------|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |

| | | |
|-------------------------|---|---|
| <p>Examples:</p> | <pre>register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); }</pre> | <pre>define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc));</pre> |
|-------------------------|---|---|

Although DataFu StreamingQuantile and StreamingMedian might appear to match Hive's percentile_approx function, Pig cannot consume percentile_approx.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 36: DataFu Functions with No Hive UDF Equivalent

| | | |
|----------------------------|-----------------------------|--------------------------------|
| AppendToBag (bags) | AssertUDF (util) | BagConcat (bags) |
| BagGroup (bags) | BagLeftOuterJoin (bags) | BagSplit (bags) |
| BoolToInt (util) | CountEach (bags) | DistinctBy (bags) |
| EmptyBagToNull (bags) | EmptyBagToNullFields (bags) | Enumerate (bags) |
| FirstTupleFromBag (bags) | HaversineDistInMiles (geo) | IntToBool (util) |
| MarkovPairs | NullToEmptyBag (bags) | PageRank (linkanalysis) |
| PrependToBag (bags) | ReservoirSample (sampling)* | ReverseEnumerate (bags) |
| SampleByKey (sampling)* | SessionCount (sessions) | Sessionize (sessions) |
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with TABLESAMPLE in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

CDH 6.3.4 introduces no new incompatible changes for Cloudera Search.

Incompatible Changes Introduced in CDH 6.1

In CDH 6.1 Cloudera Search was rebased on Apache Solr 7.4.

Deprecations

- Enabling/disabling `autoAddReplicas` cluster-wide with the API is deprecated. Use `suspend/resume` trigger APIs with `name=".auto_add_replicas"` instead.
- In the `ReplicationHandler`, the `master.commitReserveDuration` sub-element is deprecated. Configure a direct `commitReserveDuration` element instead for use in all modes (leader, follower, cloud).

Removals

- The old Leader-In-Recovery implementation (implemented in Solr 4.9) has been removed and replaced. Solr supports rolling upgrades from old 7.x versions of Solr to future 7.x releases until the last release of the 7.x major version. This means that to upgrade to Solr 8, you will have to be on Solr 7.3 or higher.
- The throttling mechanism used to limit the rate of processed autoscaling events has been removed. This deprecates the `actionThrottlePeriodSeconds` setting in the `set-properties` command of Autoscaling API. Use the `triggerCooldownPeriodSeconds` parameter to pause event processing.
- The `RunExecutableListener` event listener was removed for security reasons. If you want to listen to events caused by updates and commits, or you want to optimize, write your own listener as native Java class as part of a Solr plugin.

For more information see the [Apache Solr 7.4 Release Notes](#).

Incompatible Changes Introduced in CDH 6.0.0

Cloudera Search in CDH 6.0.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.
- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

CDH 6.3.4 introduces no new incompatible changes for Apache Sentry.

Incompatible Changes Introduced in CDH 6.0.0

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

CDH 6.3.4 introduces no new incompatible changes for Apache Spark.

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.

- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.
- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.
Since compile-time type-safety in Python and R is not a language feature, the concept of `Dataset` does not apply to these languages' APIs. Instead, `DataFrame` remains the primary programming abstraction.
- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

CDH 6.3.4 introduces no new incompatible changes for Apache Sqoop.

Incompatible Changes Introduced in CDH 6.0.0

The following changes were introduced in CDH 6.0.0 and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0.0 Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a `CHAR` or `VARCHAR` column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to `true` to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPSWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with hcatalog jobs or when hive import with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile
format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with `--hcatalog-table <HIVE_VIEW>`

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the `--hcatalog-table` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table"
--hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using `EscapeUtils`. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySQL after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of `--input-null-string` and `--input-null-non-string` options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using `--direct` connector and a MySQL database

The MySQL direct connector does not support the `--null-string`, `--null-non-string`, `--input-null-string`, and `--input-null-non-string` options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

CDH 6.3.4 introduces no new incompatible changes for Apache Zookeeper.

Timezone Names Unsupported in Impala in CDH 6.3.4

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|----------------------|--------------------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |

| | |
|--|----------------------|
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |

| | |
|------------------------------|---------------------|
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |

| | |
|--|------------------------------|
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |
| FJST | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |

| | |
|--------------------|-------------------|
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |

| | |
|-------------------------------|------------------|
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |

| | |
|--------------------------------|----------------------|
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |

| | |
|----------------------------|----------------------|
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |

| | |
|---------------------------------|------------------------|
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |

| | |
|---------------------|---------------------|
| Srednekolymusk Time | Asia/Srednekolymusk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |

| | |
|-------------------------------|--------------------|
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |

| | |
|------------------------|--------------------|
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.3.4

The following sections describe the known issues in CDH 6.3.4, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-1000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.



Important: If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can workaround the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|----------------------------------|---|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.

2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.
5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
10. Click **Save Changes**.
11. Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.
10. Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|-----------------------|---|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

(1) Ensure that the kernel is up to date.

- **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
- **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
- **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

There are no known issues in this release of Apache Accumulo.

Apache Crunch Known Issues



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

Apache Flume Known Issues

The following section describes known issues and workarounds in Flume, as of the current production release.

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to false.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework

for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x
- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

HDFS

Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH
- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.
- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported

versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:
 - Install CDH using Cloudera Manager; *or*
 - Start the NFS gateway as root; *or*
 - [Start the NFS gateway without using packages](#); *or*
 - You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the portmap.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to `777` on `.snapshot` directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

Using OpenJDK 11 on CDH6.3 and above requires re-installation of YARN MapReduce Framework JARs

Because several Java internal APIs are removed in JDK11, using older versions of MR Framework JARs will fail MR/Hive jobs, with the following error:

```
...
2019-07-18 14:54:52,483 ERROR [main] org.apache.hadoop.mapreduce.v2.app.MRAppMaster :
Error starting MRAppMaster
java.lang.NoSuchMethodError: sun.nio.ch.DirectBuffer.cleaner()Lsun/misc/Cleaner;
```

```

at org.apache.hadoop.crypto.CryptoStreamUtils.freeDB(CryptoStreamUtils.java:41)
at org.apache.hadoop.crypto.CryptoInputStream.freeBuffers(CryptoInputStream.java:687)

at org.apache.hadoop.crypto.CryptoInputStream.close(CryptoInputStream.java:320)
at java.base/java.io.FilterInputStream.close(FilterInputStream.java:180)
...

```

Workaround:

1. Go to the YARN service.
2. Select Actions > Install YARN MapReduce Framework JARs and click Install YARN MapReduce Framework JARs
3. To verify, you will find the new MR Framework JARs under the MR Application Framework Path (default: `/user/yarn/mapreduce/mr-framework/`) For example:

```

..
hdfs dfs -ls /user/yarn/mapreduce/mr-framework/
Found 5 items
-rw-r--r-- 332 yarn hadoop 215234466 2018-07-19 11:40
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.0-mr-framework.tar.gz
-rw-r--r-- 97 yarn hadoop 263033197 2018-05-18 18:38
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.x-mr-framework.tar.gz
-rw-r--r-- 331 yarn hadoop 222865312 2018-11-08 14:39
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.1.0-mr-framework.tar.gz
-rw-r--r-- 327 yarn hadoop 232020483 2019-02-25 22:46
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.2.0-mr-framework.tar.gz
-rw-r--r-- 326 yarn hadoop 234641649 2019-07-23 15:49
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.3.0-mr-framework.tar.gz
...

```

Cloudera Bug: CDH-81350

NodeManager fails because of the changed default location of container executor binary

The default location of container-executor binary and .cfg files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`. Because of this change, if you did not have the mount options `-noexec` and `-nosuid` set on `/opt`, the NodeManager can fail to start up as these options are set on `/var`.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the `-noexec` and `-nosuid` mount options on `/var` or change the container-executor binary and .cdf path using the `CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR` environment variable.

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, Enable Fair Scheduler Continuous Scheduler is turned off by default.

Workaround: Turn off `Enable Fair Scheduler Continuous Scheduling` in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on `Fair Scheduler Assign Multiple Tasks`.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated `mapred-site.xml` that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

GPU or Custom Resource Type User Jobs can Fail After Recovery

When a GPU or other custom resource goes offline when it has containers that use that particular resource and they have not reached completion, after the restart the application will start to recover. However, if the resource is not available anymore the job that uses that resource will fail.

Workaround: N/A

Affected Versions: CDH 6.2.0, CDH 6.3.0

Cloudera Issue: CDH-77649

Apache HBase Known Issues

The following section describes known issues and workarounds in HBase, as of the current production release.

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.

2. Find the **Enable Audit Collection** property and clear it.
3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x
- HDP 3.1.5
- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.
 - If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:
 - Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
 - At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x
- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for `hbase-site.xml` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom `hbase-site` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each RegionServer under the RegionServer/Server JMX metrics endpoint. When short circuit reads are not enabled, this metric will be zero. When short circuit reads are enabled and the data locality for this RegionServer is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a DataNode can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different DataNodes, meaning that there will be one RegionServer per DataNode per

HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

`IntegrationTestReplication` fails if replication does not finish before the `verify` phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

`ExportSnapshot` or `DistCp` operations may fail on the Amazon `s3a://` protocol

`ExportSnapshot` or `DistCP` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO later. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

`Export` to Azure Blob Storage (the `wasb://` or `wasbs://` protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController postOperation problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive/HCatalog/Hive on Spark/Hive Metastore Known Issues

This topic contains:

- [Hive Known Issues](#)
- [HCatalog Known Issues](#)
- [Hive on Spark Known Issues](#)
- [Hive Metastore Known Issues](#) on page 430

Hive Known Issues

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Query with an empty WHERE clause problematic if vectorization is off

Specific WHERE clauses cause problems if vectorization is off. For example,

```
SELECT COUNT (DISTINCT cint) FROM alltypesorc WHERE cstring1;
SELECT 1 WHERE 1;
```

If vectorization is turned on and no rules turn off the vectorization, queries run as expected.

Workaround: Rewrite queries with casts or equals.

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-15408](#)

Cloudera Issue: CDH-81649

Query with DISTINCT can fail if vectorization is on

A query can fail when vectorization is turned on, the query contains DISTINCT, and other rules do not turn off the vectorization. A query-specific error message appears, for example:

```
Error: Error while compiling statement: FAILED: SemanticException
org.apache.hadoop.hive.ql.metadata.HiveException: The column KEY._col2:0._col0 is not
in the vectorization context column map {KEY._col0=0, KEY._col1=1, KEY._col2=2}.
(state=42000,code=40000)
```

Workaround: Turn off vectorization for such queries as follows:

```
set hive.vectorized.execution.enabled=false;
```

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-19032](#)

Cloudera Issue: CDH-81341

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: Arithmetic exception [divide by] 0. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the SELECT clause on large values in columns with the data type of BIGINT might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are BIGINT data types in the SELECT clause of the query, incorrect results might be returned. Comparison operators include `==`, `!=`, `<`, `<=`, `>`, and `>=`. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference of values in such columns is out of range for a LONG (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 - (-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a LONG (64-bit) data type can hold.

Workaround: Use a `DECIMAL` type instead of `BIGINT` for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the `ORDER BY` clause is not supported for `SELECT *` queries

When column positions are specified in `ORDER BY` clauses, they are not honored for `SELECT *` queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

`ALTER PARTITION ... SET LOCATION` does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use `ALTER PARTITION ... SET LOCATION` on S3 or between S3 and HDFS. The rest of the `ALTER PARTITION` commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Cannot create archive partitions with external HAR (Hadoop Archive) tables

```
ALTER TABLE ... ARCHIVE PARTITION is not supported on external tables.
```

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types `Server` and `URI` are not supported in "`SHOW GRANT ROLE roleName on OBJECT objectName`" statements

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

Change in Precision of trigonometric functions for Hive Queries with JDK 11

If your Hive queries use trigonometric functions (such as degrees-to-radians, radians-to-degrees, or `sin`) there may be a difference in the output of the 15th decimal place.

Cloudera Bug: CDH-81322

Logging differences create Supportability Issues

In the event you need Apache Hive support from Cloudera, the availability of logs is critical. Some CDH releases do not enable log4j2 logging for Hive by default. Because of this, logs are not generated. Furthermore, the specified CDH releases are not configured to remove old log files to make room for new ones. This can cause the new logs to be lost. When Hive logs are missing, Support cannot troubleshoot Hive problems efficiently.

Components affected: Hive

Products affected: Hive

Releases affected:

- CDH 6.1
- CDH 6.2
- CDH 6.3

Users affected: Hive users

Severity: Medium

Impact: The absence of Hive log files causes delays in troubleshooting Hive problems.

Action required: Manually configure log4j2 logging, and delete old log files to make room for new ones.

1. Open Cloudera Manager.
2. Select **Clusters > HIVE**.
3. Click the **Configuration** tab.
4. In the Search field, enter Hive Metastore Server Logging Advanced Configuration Snippet (Safety Valve).
5. Add the following XML to the field (or switch to Editor mode, and enter each property and its value in the fields provided).

```
<property>
  <name>rootLogger.appenderRefs</name>
  <value>root, console, DRFA, PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.name</name>
  <value>org.apache.hadoop.hive.ql.log.PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.level</name>
  <value>DEBUG</value>
</property>
<property>
  <name>appender.DRFA.filePattern</name>
  <value>${log.dir}/${log.file}.%i</value>
</property>
<property>
  <name>appender.DRFA.strategy.fileIndex</name>
  <value>min</value>
</property>
```

6. In the Search field, enter HiveServer2 Logging Advanced Configuration Snippet (Safety Valve).
7. Add the XML properties from step 5.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-384: Logging differences in CDH 6 create Supportability Issues](#)

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

Hive on Spark (HoS) Known Issues

A query fails with `IllegalArgumentException` Size requested for unknown type: `java.util.Collection`

An example of a query that fails due to this issue is:

```
WITH t2 AS
(SELECT array(1,2) AS c1
UNION ALL SELECT array(2,3) AS c1)
SELECT collect_list(c1)
FROM t2
```

Workaround: Create a table to store the array data.

Affected Versions: 6.3.x, 6.2.x, 6.1.x

Cloudera Issue: CDH-80169

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form "client.RpcRetryingCaller: Call exception...", then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hive Metastore Known Issues

HMS Read Authorization: `get_num_partitions_by_filter` Ignores Authorization

A user can get the number of partitions of a table regardless of the user's permissions

Hue Known Issues

The following sections describe known issue and workaround in Hue, as of the current production release.

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - The `Add Description` field in the Table schema browser does not sanitize user inputs as expected.
- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower
- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower
- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

Invalid S3 URI error while accessing S3 bucket

The Hue Load Balancer merges the double slashes (//) in the S3 URI into a single slash (/) so that the URI prefix `"/filebrowser/view=S3A://"` is changed to `"/filebrowser/view=S3A:/"`. This results in an error when you try to access the S3 buckets from the Hue File Browser through the port 8889.

The Hue web UI displays the following error: “Unknown error occurred”.

The Hue server logs record the “ValueError: Invalid S3 URI: S3A” error.

Workaround:

To resolve this issue, add the following property in the Hue Load Balancer Advanced Configuration Snippet:

1. Sign in to Cloudera Manager as an Administrator.
2. Go to **Clusters > Hue service > Configurations > Load Balancer** and search for the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
3. Specify `MergeSlashes OFF` in the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
4. Click **Save Changes**.
5. Restart the Hue Load Balancer.

You should be able to load the S3 browser from both 8888 and 8889 ports.

Alternatively, you can use the Hue server port 8888 instead of the load balancer port 8889 to resolve this issue.

Error while rerunning Oozie workflow

You may see an error such as the following while rerunning an already executed and finished Oozie workflow through the Hue web interface: `E0504: App directory [hdfs://cdh/user/hue/oozie/workspaces/hue-oozie-1571929263.84] does not exist.`

Workaround:

To resolve this issue, add the following property in the Hue Load Balancer Advanced Configuration Snippet:

1. Sign in to Cloudera Manager as an Administrator.
2. Go to **Clusters > Hue service > Configurations > Load Balancer** and search for the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
3. Specify `MergeSlashes OFF` in the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
4. Click **Save Changes**.

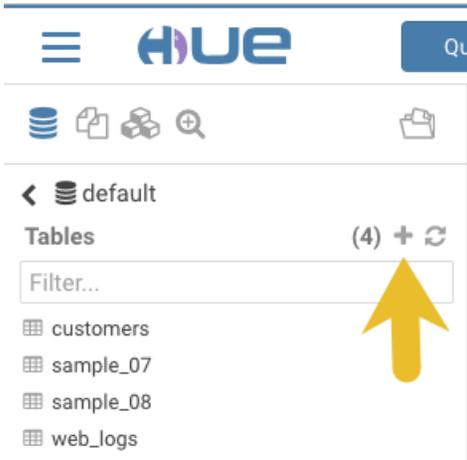
5. Restart the Hue Load Balancer.

Table Browser Must Be Refreshed to View Tables Created with the Data Import Wizard

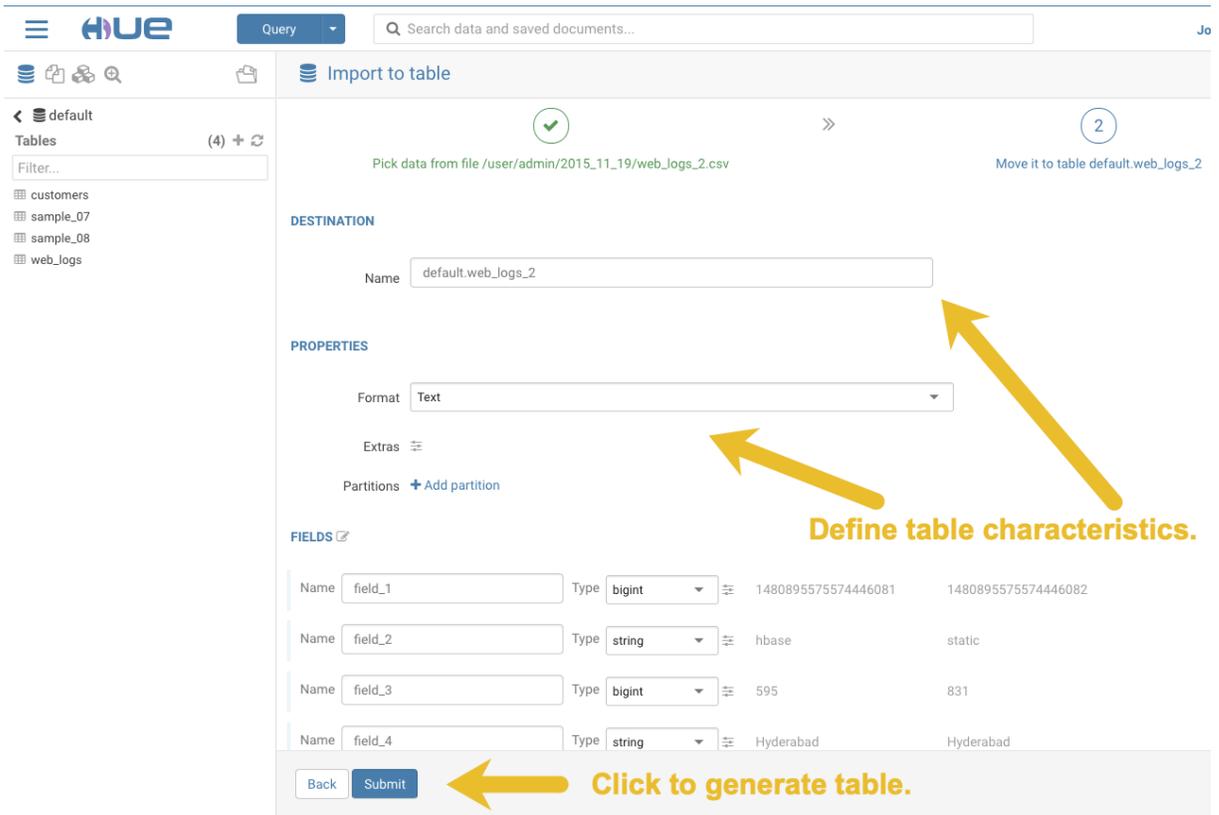
When you create a new table from a file by using the Data Import Wizard, the newly created table columns do not display in the Table Browser until you refresh it.

For example:

1. Create a table from the sample file `web_logs_2.csv` by clicking the plus sign in the left panel, which launches the Data Import Wizard:



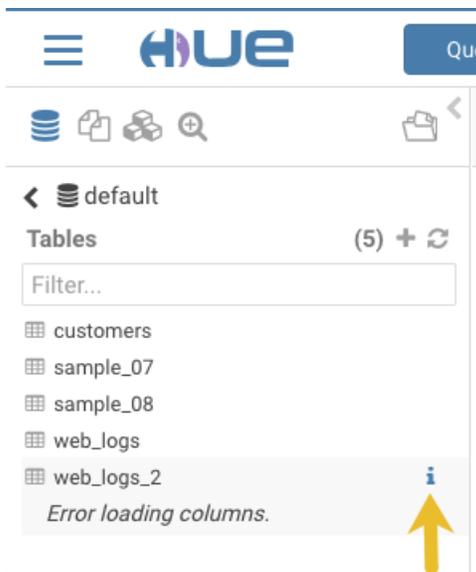
2. After you define the table, click **Submit** to generate the new table:



3. After you generate the new table, you can see it listed on the left assist panel, but when you click the table name to display the columns, an error displays:

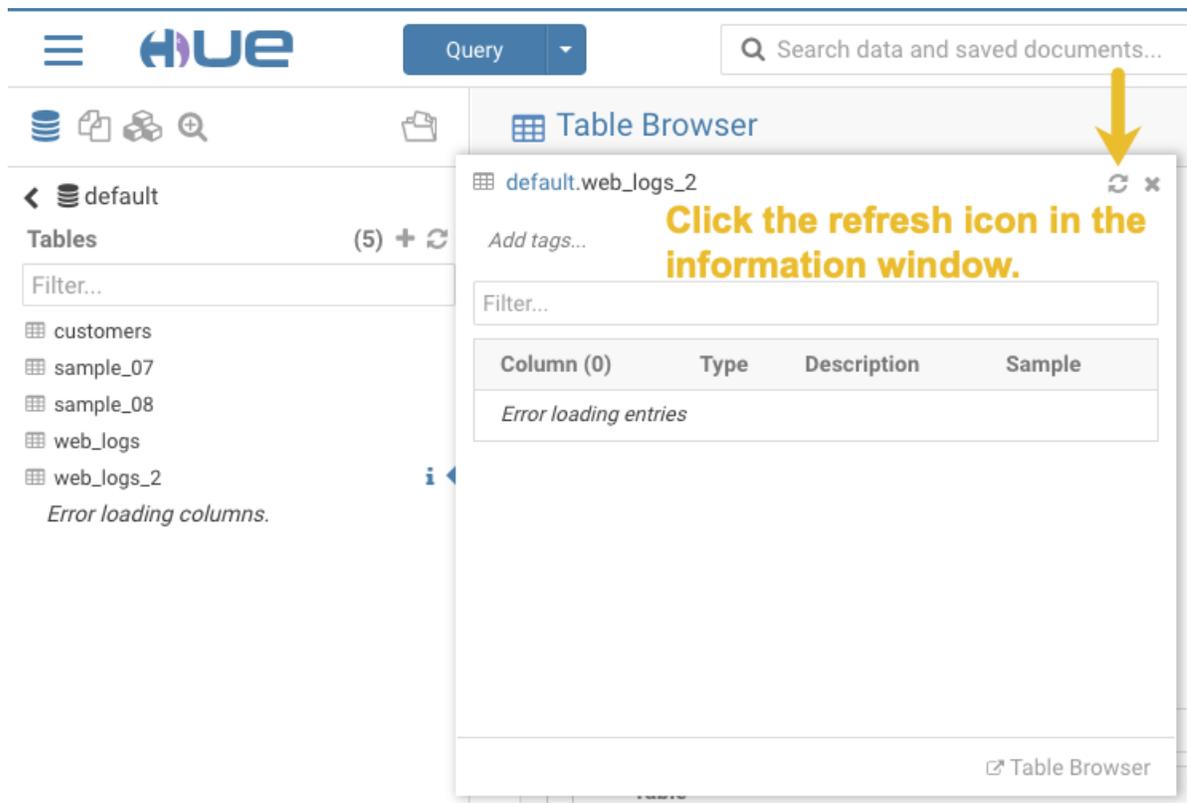
**Workaround:**

1. Click the information icon that is adjacent to the new table:



Click the information icon.

2. In the information window that opens, click the refresh icon in the upper right corner to view the table columns:



Using the refresh icon in the information window is the least expensive way to refresh the page so performance is not affected.

Affected Version(s): CDH 6.2.0

Cloudera Issue: CDH-77238

Hue does not support the Spark App

Hue does not currently support the Spark application.

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname`, only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \{(string)\} [=:].*And the replacement could be for example: secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

.

Products affected:

- CDP Private Cloud Base
- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: [CVE-2021-28131](#)

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate section memory!  
terminate called after throwing an instance of  
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>>'  
>
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max  
echo 2000000 > /proc/sys/kernel/pid_max  
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)

Breakpad minidumps can be very large when the thread count is high

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the `impalad` daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Incorrect result due to constant evaluation in query with outer join

An `OUTER JOIN` query could omit some expected result rows due to a constant such as `FALSE` in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
  INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
  RIGHT JOIN alltypes a3 ON a1.year = a1.bigint_col;
```

```
+-----+
| Explain String |
+-----+
| Estimated Per-Host Requirements: Memory=1.00KB VCores=1 |
+-----+
```

```
| 00:EMPTYSET |
+-----+
|
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a `LIKE` operator is an escaped `\%` character, it does not match a `%` final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: `impala::Coordinator::ValidateCollectionSlots`

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null", "string"]` instead of `["string", "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for `impalad_flags`** to specify the load balancer address with the `HiveServer2` port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

Unable to Correctly Parse the Terabyte Unit

Impala does not support parsing strings that contain "TB" when used as a unit for terabytes. The flags related to memory limits may be affected, such as the flags for scratch space and data cache.

Workaround: Use other supported units to specify values, e.g. GB or MB.

Affected Versions: CDH 6.3.x and lower versions

Fixed Versions: CDH 6.4.0

Apache Issue: [IMPALA-8829](#)

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

CASTing scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.3.1

Apache Kafka Known Issues

The following sections describe known issues and workarounds in Kafka, as of the current production release.

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to `true`.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: [KAFKA-2561](#)

Cloudera Issue: None

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions:All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

Kite SDK Known Issues

There are no known issues in this release.

Apache Kudu Known Issues

The following sections describe known issues and workarounds in Kudu, as of the current production release.

You get "The user 'kudu' is not part of group 'hive' on the following hosts: " warning by the Host Inspector

If you are using fine grained authorization for Kudu, and you are also using Kudu-HMS integration with HDFS-Sentry sync, then you may get the "The user 'kudu' is not part of group 'hive' on the following hosts: " warning while upgrading to CDH 6.3.

Workaround: Run the following command on all the HMS servers:

```
usermod -aG hive kudu
```

Affected Versions: CDH 6.3 / Kudu 1.10

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

The following sections describe known issues and workarounds in Oozie, as of the current production release.

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in this release.

Apache Phoenix Known Issues

The following sections describe known issues and limitations in Apache Phoenix, as of the current production release.

The Phoenix artifacts provided in the Maven repository have transitive dependencies on some artifacts that are not available either in the Apache central repository, the Cloudera provided CDH repository, or the Cloudera provided Phoenix repository.

Workaround: When you add a dependency on any of the provided Maven Phoenix artifacts, you must exclude the `org.glassfish.web:javax.servlet.jsp` artifact. For example:

```

<dependency>
  <groupId>org.apache.phoenix</groupId>
  <artifactId>phoenix-core</artifactId>
  <version>5.0.0-cdh6.2.0</version>
  <exclusions>
    <exclusion>
      <groupId>org.glassfish.web</groupId>
      <artifactId>javax.servlet.jsp</artifactId>
    </exclusion>
  </exclusions>
</dependency>

```

Affected Versions: CDH 6.2.x, CDH 6.3.x.

Cloudera Issue: CDH-81419

Apache Pig Known Issues

There are no known issues in this release.

Apache Solr/Cloudera Search Known Issues

The following sections describe known issues and limitations in Search, as of the current production release.

Splitshard of HDFS index checks local filesystem and fails

When performing a shard split on an index that is stored on HDFS, `SplitShardCmd` still evaluates free disk space on the local file system of the server where Solr is installed. This may cause the command to fail, perceiving that there is no adequate disk space to perform the shard split.

Workaround: None

Affected versions: All

Default Solr core names cannot be changed (limitation)

Although it is technically possible to give user-defined Solr core names during core creation, it is to be avoided in the context of Cloudera Search. Cloudera Manager expects core names in the default "collection_shardX_replicaY" format. Altering core names results in Cloudera Manager being unable to fetch Solr metrics for the given core and this, eventually, may corrupt data collection for co-located core, or even shard and server level charts.

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with CrunchIndexerTool, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the MapReduceIndexerTool nor the HBaseMapReduceIndexerTool

The MapReduceIndexerTool and the HBaseMapReduceIndexerTool can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the MapReduceIndexerTool or HBaseMapReduceIndexerTool. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the “Browse” and “Spell” Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irreversibly corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool` multiple times may produce duplicate entries in a collection.

Repeatedly running the `MapReduceIndexerTool` on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the `HBaseMapReduceIndexerTool` unless it is run with more than zero reducers.

Workaround: To avoid this issue, use `HBaseMapReduceIndexerTool` with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139

Apache Sentry Known Issues

The following sections describe known issues and workarounds in Sentry, as of the current production release.

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.

Affected Versions:

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694

GRANT/REVOKE operations could fail if there are too many concurrent requests

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.

Affected Versions: CDH 5.13.0 and above

Apache Issue: [SENTRY-1855](#)

Cloudera Issue: CDH-56553

Creating large set of Sentry roles results in performance problems

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.

Affected Versions: CDH 5.13.0 and above

Cloudera Issue: CDH-59010

Users can't track jobs with Hive and Sentry

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above

Cloudera Issue: CDH-22890

Column-level privileges are not supported on Hive Metastore views

`GRANT` and `REVOKE` for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

SELECT privilege on all columns does not equate to SELECT privilege on table

Users who have been explicitly granted the `SELECT` privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as `SELECT COUNT (1)` or `SELECT COUNT (*)` will not work even if you have the `SELECT` privilege on all columns.

There is one exception to this. The `SELECT * FROM TABLE` command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The EXPLAIN SELECT operation works without table or column-level privileges

Users are able to run the `EXPLAIN SELECT` operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types Server and URI are not supported in `SHOW GRANT ROLE roleName on OBJECT objectName`

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|------------------------------------|-----------------------------------|
| <code>hdfs://absolute/path/</code> | <code>hdfs://relative/path</code> |
| <code>s3a://bucketname/</code> | <code>s3a://bucketname</code> |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6.3.x. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

`RDD.repartition()` has different failure handling in Spark 2.4 and may cause job failures

The `RDD.repartition()` transformation, which reshuffles data in the RDD randomly to create either more or fewer partitions and then balances it across the partitions, was using a round-robin method to distribute data that caused incorrect answers to be returned for RDD jobs. This issue has been corrected, but it introduced a behavior change in RDD job failure handling. Now, Spark actively fails a job if there is a fetch failure that was caused by a node failure after repartitioning.

Workaround: Use the `RDD.checkpoint()` method to save the intermediate RDD data to HDFS. First, call `SparkContext.setCheckpointDir(directory: String)` to set the checkpoint directory where the intermediate data will be saved. Note that the directory must be an HDFS path. Then mark the RDD for checkpointing by calling `RDD.checkpoint()` when you use the `RDD.repartition()` transformation.

Apache Issue: [SPARK-23243](#)

Cloudera Issue: CDH-76413

Structured Streaming exactly-once fault tolerance constraints

In Spark Structured Streaming, the exactly-once fault tolerance for `file sink` is valid only for files that are in the manifest. These files are located in the `_spark_metadata` subdirectory of the `file sink` output directory. Only process files that have file names starting with digits. Other temporary files can also appear in this directory, but they should not be processed. Typically, these temporary file file names start with a period (".").

You can list the valid manifest files, excluding the temporary files, by using a command like the following, which assumes your output directory is located at `/tmp/output`. As the appropriate user, run the following command to list the valid manifest files:

```
hadoop fs -ls /tmp/output/_spark_metadata/[0-9]*
```

Workaround: None

Affected Versions: CDH 6.1.0 and higher

Cloudera Issue: CDH-75191

Spark SQL does not respect size limit for the varchar type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's `client` mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

Apache Sqoop Known Issues

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (doc import + `--as-parquetfile`) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (`sqoop import --as-parquetfile`) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \${CONDITIONS}" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/5dbcac42-5d69-4e46-88c2-17dbedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a `--target-dir` which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

There are no known issues in this release.

CDH 6.3.3 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for CDH 6.3.3:

[New Features in CDH 6.3.3](#)

This is a maintenance release that fixes some important issues. For details, see [Fixed Issues in CDH 6.3.3](#).

Installation and Upgrade Changes

Installation or Upgrade of Cloudera Manager and CDH requires authentication to access downloads

Beginning with Cloudera Manager and CDH 6.3.3, downloading new versions of these products will require a valid Cloudera Enterprise license file, and/or a username and password obtained from Cloudera. All Cloudera Manager package, CDH parcel and CDH package repositories now require authentication with valid credentials to access any version numbered 6.3.3 or later. For more information on using these credentials, see the documentation below.

See:

- [Cloudera Manager Upgrade Guide](#)
- [CDH Upgrade Guide](#)
- [Cloudera Installation Guide](#)

Cloudera Express has been discontinued

Beginning with CDH 6.3.3 (and CDP Data Center 7.0), Cloudera Express is no longer available. Upgrades to Cloudera Manager or CDH 6.3.3 and higher are not supported when running Cloudera Express. A valid Cloudera Enterprise or CDP Data Center license must be in place before upgrading to Cloudera Manager 6.3.3 or 7.x or the upgrade will not be completed.

Downgrading from Cloudera Enterprise license to Cloudera Express license is also no longer supported in Cloudera Manager 6.3.3 and higher.



Note: An expired Cloudera Enterprise or CDP license, or an expired trial license will disable the Cloudera Manager Admin Console until a valid license key is provided.

Apache Hive

Database.Table names must be escaped

CDH includes the Hive-16907 bug fix, which rejects ``db.table`` in SQL queries. A dot (.) is not allowed in table names. You need to change queries that use such references to prevent Hive from interpreting the entire `db.table` string as the table name: ``db`.`tablename``

Apache Kudu

The following are some of the notable new features in this release of Kudu:

Support for EC-based ciphers

Kudu supports EC-based ciphers in the web UI beginning with CDH 6.3.3.

Optimizations and improvements

- The evaluation of predicates on columns of primitive types and `NULL` or `NOT NULL` predicates has been optimized to leverage SIMD instructions.

Fixed Issues in CDH 6.3.3

CDH 6.3.3 fixes the following issues:

HDFS Snapshot corruption

A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Products affected: HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0 - 6.2.1, 6.3.0, 6.3.1, 6.3.2

Users affected: Any clusters with HDFS Snapshots enabled

Impact: A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Standby NameNode detects the inconsistent snapshot data structure and shuts itself down. To recover from this situation, the fsimage must be repaired and put back into both NameNodes' fsimage directory for the Standby NameNode to start normally. The Active NameNode stays up. However no fsimage checkpoint is performed because the Standby NameNode is down.

This problem can also prevent snapshots from being deleted or files within snapshots being listed. The following is an example of a typical error:

```
hdfs dfs -deleteSnapshot /path snapshot_123
deleteSnapshot: java.lang.IllegalStateException
```

The recovery of the corrupt fsimage can result in the loss of snapshots.

Immediate action required:

- **Upgrade:** Update to a version of CDH containing the fix.
- **Workaround:** Alternatively, avoid using snapshots. Cloudera BDR uses snapshots automatically when the relevant directories are snapshottable. Hence, we strongly recommend avoiding the upgrade to the affected releases if you are using BDR. For information and instructions, see [Enabling and Disabling HDFS Snapshots](#).

Addressed in release/refresh/patch: CDH 6.3.3

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-390: HDFS Snapshot corruption](#)

Processing UpdateRequest with delegation token throws NullPointerException

When using the Spark Crunch Indexer or another client application which utilizes the SolrJ API to send Solr Update requests with delegation token authentication, the server side processing of the request might fail with a NullPointerException.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Apache Issue: SOLR-13921

Cloudera Issue: CDH-82599

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

HBase Lily indexer might fail to write role log files

In certain scenarios the HBase Lily Indexer (Key-Value Store Indexer) fails to write its role log files.

Workaround: None

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82342

Adding a new indexer instance to HBase Lily Indexer fails with GSSException

When Kerberos authentication is enabled and adding a new indexer instance to HBase Lily Indexer (Key-Value Store Indexer), the authentication might fail when Lily is communicating to the HBase Master process, throwing a similar Exception:

```
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid credentials provided (Mechanism level: Failed to find any Kerberos tgt)]
```

Workaround: Ensure that the Lily indexer has a Sentry dependency configured by following these steps:

1. Go to **Cloudera Manager > Key-Value Store indexer > Configuration**.
2. Make sure the **Sentry Service** configuration option points to a Sentry service instance instead of **none**.

The workaround does not require defining any Sentry roles or privileges, it is just to trigger a code execution path which will authenticate the HBase service user.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82566

The SentryKafkaAuthorizer throws an exception when describing ACLs via Kafka AdminClient

If Sentry contains Kafka authorization policies for any `ConsumerGroup` resource, Kafka authorization policies cannot be described and manipulated via Kafka `AdminClient`. This is due to a conversion error in Sentry. The `SentryKafkaAuthorizer` throws the following exception when converting the `ConsumerGroup` resource type between Sentry and Kafka libraries.

```
kafka.common.KafkaException: CONSUMERGROUP not a valid resourceType name. The valid names are Topic,Group,Cluster,TransactionalId,DelegationToken
```

This issue impacts any application that uses the ACL manipulation methods of `KafkaAdminClient` in Sentry enabled environments.

Workaround: Remove authorization policies for Kafka consumer groups in Sentry.

Affected Versions: CDH 5.x, CDH 6.3.0, 6.3.1, 6.3.2

Fixed Versions: 6.3.3

Apache Issue: SENTRY-2535

Cloudera Issue: CDH-82457

Upstream Issues Fixed

The following upstream issues are fixed in CDH 6.3.3:

Apache Accumulo

There are no notable fixed issues in this release.

Apache Avro

There are no notable fixed issues in this release.

Apache Crunch

There are no notable fixed issues in this release.

Apache Flume

There are no notable fixed issues in this release.

Apache Hadoop

The following issue is fixed in CDH 6.3.3:

- [HADOOP-15169](#) - The `hadoop.ssl.enabled.protocols` property should be considered in `httpserver2`
- [HADOOP-15812](#) - ABFS: Improve the `AbfsRestOperationException` format to ensure that the entire message can be displayed on the console
- [HADOOP-15846](#) - ABFS: Fix mask related bugs in `setAcl`, `modifyAclEntries`, and `removeAclEntries`
- [HADOOP-15872](#) - ABFS: Update to target the latest REST version for ADLS Gen 2
- [HADOOP-15940](#) - ABFS: For HNS account, avoid unnecessary get call when performing a rename operation.
- [HADOOP-15948](#) - Inconsistency in get and put syntax if the name of a file or a directory contains spaces
- [HADOOP-15968](#) - ABFS: Add `try` and `catch` for UGI failure when initializing ABFS
- [HADOOP-15969](#) - ABFS: `getNamespaceEnabled` can fail blocking of user access using ACLs
- [HADOOP-15972](#) - ABFS: Reduce the list page size to 500
- [HADOOP-15975](#) - ABFS: Remove timeout check for DELETE and RENAME
- [HADOOP-16048](#) - ABFS: Fix Date format parser
- [HADOOP-16461](#) - Regression: `FileSystem` cache lock parses XML within the lock
- [HADOOP-16578](#) - Avoid `FileSystem` API calls when the `FileSystem` already exists
- [HADOOP-16587](#) - Make ABFS AAD-endpoints configurable

HDFS

The following issues are fixed in CDH 6.3.3:

- [HDFS-13193](#) - Various improvements for `BlockTokenSecretManager`
- [HDFS-13941](#) - Make `storageId` in `BlockPoolTokenSecretManager.checkAccess` optional
- [HDFS-14026](#) - Overload `BlockPoolTokenSecretManager.checkAccess` to make `storageId` and `storageType` optional
- [HDFS-14366](#) - Improve HDFS append performance

MapReduce 2

There are no notable fixed issues in this release.

YARN

The following issues are fixed in CDH 6.3.3:

- [YARN-9217](#) - Nodemanager will fail to start if GPU is misconfigured on the node or GPU drivers missing
- [YARN-9235](#) - If linux container executor is not set for a GPU cluster `GpuResourceHandlerImpl` is not initialized and NPE is thrown
- [YARN-9337](#) - Addendum to fix compilation error due to mockito spy call
- [YARN-9337](#) - GPU auto-discovery script runs even when the resource is given by hand

Apache HBase

The following issues are fixed in CDH 6.3.3:

- [HBASE-21991](#) - [Addendum] Mark `LossCounting` as Private
- [HBASE-22380](#) - Break circle replication when doing bulkload
- [HBASE-23046](#) - Remove compatibility case from truncate command

Apache Hive

The following issues are fixed in CDH 6.3.3:

- [HIVE-21999](#) - Add sensitive ABFS configuration properties to HiveConf hidden list
- [HIVE-22236](#) - Fail to create View selecting View containing NOT IN subquery

Hue

The following issues are fixed in CDH 6.3.3:

- [HUE-8946](#) - [core] Add back name as argument to import LDAP group or user commands
- [HUE-8946](#) - [useradmin] Fix argument as list in `import_ldap_user` and `import_ldap_group`
- [HUE-9011](#) - [hive] Fix invalid delimiters in create Hive table
- [HUE-9019](#) - [core] Fix `concurrent_user_session_limit` failed after Django upgrade
- [HUE-9025](#) - [editor] Fix multi query statement with invalidate metadata
- [HUE-9027](#) - [editor] Fix erratic behaviour of the horizontal result scrollbar

Apache Impala

The following issues are fixed in CDH 6.3.3:

- [IMPALA-6159](#) - Enabled TCP Keepalive packets for all outbound connections to ensure that stale TCP connections in an idle cluster are detected and closed within a time bound and a new connection is created on the next use
- [IMPALA-7802](#) - Now Impala closes connections of idle client sessions to allow the service threads to be freed up
- [IMPALA-8333](#) - Removed a benign Impala Shell warnings message at the start-up time
- [IMPALA-8612](#) - Fixed sporadic the null point exception error when dropping an authorized table
- [IMPALA-8673](#) - Added the `DEFAULT_HINTS_INSERT_STATEMENT` query option that sets the default hints for the `INSERT` statements with no optimizer hint specified
- [IMPALA-8790](#) - Fixed an error for queries containing `GROUP BY` expressions of aggregations
- [IMPALA-8851](#) - Fixed an issue where the `DROP TABLE IF EXISTS` statement on a non-existing table threw an authorization exception when authorization is enabled

- [IMPALA-8969](#) - Fixed an issue where grouping aggregator could cause segmentation fault when doing multiple aggregations

Apache Kafka

There are no notable fixed issues in this release.

Apache Kite

There are no notable fixed issues in this release.

Apache Kudu

The following issues are fixed in CDH 6.3.3:

- [KUDU-3014](#) - Fixed a bug in the connection negotiation code of the Kudu Java client. Now the Kudu Java client verifies the channel binding information while negotiating connections to Kudu servers
- [KUDU-2980](#) - Fixed an issue of fault-tolerant scan operation failing for a projection with key columns specified in an order other than the table schema's order
- [KUDU-2871](#) - Fixed RPC negotiation failure in the case when TLS v1.3 is supported at both the client and the server side. This is a temporary workaround before the connection negotiation code is properly updated to support 1.5-RTT handshake used in TLS v1.3. The issue affected Linux distributions shipped or updated with OpenSSL version 1.0.2 and newer
- [KUDU-2989](#) - Fixed an issue with connection negotiation using SASL mechanism when server FQDN is longer than 64 characters
- Squeasel now supports ECC ciphers such as ECDH, based on the prime256v1 curve

Apache Oozie

The following issues are fixed in CDH 6.3.3:

- [OOZIE-3464](#) - Use UTF8 charset instead of default one
- [OOZIE-3543](#) - Upgrade quartz to 2.3.1

Apache Parquet

There are no notable fixed issues in this release.

Apache Pig

There are no notable fixed issues in this release.

Cloudera Search

The following issues are fixed in CDH 6.3.3:

- [SOLR-13532](#) - Unable to start core recovery due to timeout in ping request
- [SOLR-13921](#) - Processing UpdateRequest with delegation token throws NullPointerException

Apache Sentry

The following issues are fixed in CDH 6.3.3:

- [SENTRY-2535](#) - SentryKafkaAuthorizer throws Exception when describing ACLs

Apache Spark

The following issues are fixed in CDH 6.3.3:

- [SPARK-24621](#) - [WEBUI] Show secure URLs on web pages
- [SPARK-27453](#) - Pass partitionBy as options in DataFrameWriter
- [SPARK-27621](#) - [ML] Linear Regression - validate training related params such as loss only during fitting phase
- [SPARK-29082](#) - [CORE] Skip delegation token generation if no credentials are available
- [SPARK-29105](#) - [CORE] Keep driver log file size up to date in HDFS

Apache Sqoop

There are no notable fixed issues in this release.

Apache ZooKeeper

The following issues are fixed in CDH 6.3.3:

- [ZOOKEEPER-2251](#) - Add Client side packet response timeout to avoid infinite wait

Unsupported Features in CDH 6.3.3

This page lists the unsupported features in CDH 6.3.x. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.3.3](#) on page 494.

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 457
- [YARN Unsupported Features](#) on page 457

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.3.x:

- ACLs for the NFS gateway ([HADOOP-11004](#))
- Aliyun Cloud Connector ([HADOOP-12756](#))
- Allow HDFS block replicas to be provided by an external storage system ([HDFS-9806](#))
- Consistent standby Serving reads ([HDFS-12943](#))
- HDFS Router Based Federation ([HDFS-10467](#))
- More than two NameNodes ([HDFS-6440](#))
- NameNode Federation ([HDFS-1052](#))
- OpenStack Swift ([HADOOP-8545](#))
- SFTP FileSystem ([HADOOP-5732](#))
- Storage policy satisfier ([HDFS-10285](#))
- Upgrade Domain ([HDFS-7541](#))

YARN Unsupported Features

The following YARN features are not supported in CDH 6.3.x:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers
- Distributed Scheduling
- Docker on YARN (DockerContainerExecutor)
- Native Services
- New Aggregated Log File Format
- Node Labels
- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Estimator Service
- Resource Profiles
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.3.x:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction
- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation
- Client tarball
- Rolling upgrade from CDH 5 HBase versions

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.3.x:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution
- Hive Metastore - Derby
- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))
- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka features are not supported in CDH 6.3.x:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.
- Kafka Connect is included in CDH 6.3.x, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.3.x, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.3.x:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.3.x:

- Pig on Tez is not supported in CDH 6.1.x ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.3.x:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.3.x:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

([Known Issue](#))

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.x, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.3.x:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)
- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is supported, but the following features of it *are not*:
 - Continuous processing, which is still experimental, is not supported

- Stream static joins with HBase have not been tested and therefore are not supported
- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.3.x:

- `import-mainframe`

Cloudera Connector for Netezza

Cloudera Connector for Netezza is not supported in CDH 6.3.x

Incompatible Changes in CDH 6.3.3



Important:

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.3.3 grouped by component:

Apache Accumulo

CDH 6.3.1 introduces no new incompatible changes for Apache Accumulo.

Apache Avro

API Changes

One method was removed in CDH 6.0.0:

```
GenericData.toString (Object datum, StringBuilder buffer)
```

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires GenericEnumSymbol - likely to break current Generic API users that often have String or Java Enum for these fields
- [AVRO-1502](#): Avro Objects now Serializable - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be HTrace
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.
- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).
- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. The only additional configuration required to use HBase2Sink is to replace the component name in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

com.google.common.collect.ImmutableMap

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

- [HDFS Incompatible Changes](#) on page 461
- [MapReduce](#) on page 462
- [YARN](#) on page 463

HDFS Incompatible Changes

CDH 6.0.0, introduced the following incompatible changes for HDFS:

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.

- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSClient#mkdirs` and `DFSClient#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.
- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.
 - All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.
- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0
- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.
- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0
 - asm from 3.2 to 5.0.4

MapReduce

CDH 6.0.0, introduced the following incompatible changes:

- Support for MapReduce v1 has been dropped from CDH 6.0.0.
- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

CDH 6.3.1 introduces no new incompatible changes for Apache YARN.

Apache HBase

CDH 6.2.x contains the following downstream HBase incompatible change:

hbase.security.authorization

The default value for hbase.security.authorization has been changed from true to false. Secured clusters should make sure to explicitly set it to true in XML configuration file before upgrading to one of these versions ([HBASE-19483](#)). True as the default value of hbase.security.authorization was changed because not all clusters need authorization. (History: [HBASE-13275](#)) Rather, only the clusters which need authorization should set this configuration as true.

Incompatible Changes

For more information about upstream incompatible changes, see the Apache Reference Guide [Incompatible Changes](#) and [Upgrade Paths](#).

CDH 6.1.0 introduces the following incompatible changes for HBase:

- [HBASE-20270](#): Error triggered command help is no longer available.
- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.

CDH 6.0.x introduces the following upstream HBase incompatible changes:

- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.
- Public interface API changes:
 - [HBASE-15607](#): Admin
 - [HBASE-19112](#), [HBASE-18945](#): Cell
 - Region, Store, HBaseTestingUtility
- [HBASE-18792](#): hbase-2 needs to defend against hbck operations
- [HBASE-15982](#): Interface ReplicationEndpoint extends Guava's Service.
- [HBASE-18995](#): Split CellUtil into public CellUtil and PrivateCellUtil for Internal use only.
- [HBASE-19179](#): Purged the hbase-prefix-tree module and all references from the code base.
- [HBASE-17595](#): Add partial result support for small/limited scan; Now small scan and limited scan could also return partial results.
- [HBASE-16765](#): New default split policy, SteppingSplitPolicy.
- [HBASE-17442](#): Move most of the replication related classes from hbase-client to hbase-replication package.
- [HBASE-16196](#): The bundled JRuby 1.6.8 has been updated to version 9.1.9.0.
- [HBASE-18811](#): Filters have been moved from Public to LimitedPrivate.
- [HBASE-18697](#): Replaced hbase-shaded-server jar with hbase-shaded-mapreduce jar.
- [HBASE-18640](#): Moved mapreduce related classes out of hbase-server into separate hbase-mapreduce jar .
- [HBASE-19128](#): Distributed Log Replay feature has been removed.
- [HBASE-19176](#): Hbase-native-client has been removed.
- [HBASE-17472](#): Changed semantics of granting new permissions. Earlier, new grants would override previous permissions, but now, the new and existing permissions get merged.
- [HBASE-18374](#): Previous "mutate" latency metrics has been renamed to "put" metrics.
- [HBASE-15740](#): Removed Replication metric source.shippedKBs in favor of source.shippedBytes.
- [HBASE-13849](#): Removed restore and clone snapshot from the WebUI.
- [HBASE-13252](#): The concept of managed connections in HBase (deprecated before) has now been extinguished completely, and now all callers are responsible for managing the lifecycle of connections they acquire.
- [HBASE-14045](#): Bumped thrift version to 0.9.2.
- [HBASE-5401](#): Changes to number of tasks PE runs when clients are mapreduce. Now tasks == client count. Previous we hardcoded ten tasks per client instance.

Changed Behavior

CDH 6.1.x contains the following HBase behavior changes:

- [HBASE-14350](#): Assignment Manager v2 - Split/Merge have moved to the Master; it runs them now. Hooks around Split/Merge are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-18271](#): Moved to internal shaded netty.
- [HBASE-17343](#): Default MemStore to be CompactingMemStore instead of DefaultMemStore. In-memory compaction of CompactingMemStore demonstrated sizable improvement in HBase's write amplification and read/write performance.
- [HBASE-19092](#): Make Tag IA.LimitedPrivate and expose for CPs.
- [HBASE-18137](#): Replication gets stuck for empty WALs.
- [HBASE-17513](#): Thrift Server 1 uses different QOP settings than RPC and Thrift Server 2 and can easily be misconfigured so there is no encryption when the operator expects it.
- [HBASE-16868](#): Add a replicate_all flag to replication peer config. The default value is true, which means all user tables (REPLICATION_SCOPE != 0) will be replicated to peer cluster.
- [HBASE-19341](#): Ensure Coprocessors can abort a server.
- [HBASE-18469](#): Correct RegionServer metric of totalRequestCount.
- [HBASE-17125](#): Marked Scan and Get's setMaxVersions() and setMaxVersions(int) as deprecated. They are easy to misunderstand with column family's max versions, so use readAllVersions() and readVersions(int) instead.
- [HBASE-16567](#): Core is now up on protobuf 3.1.0 (Coprocessor Endpoints and REST are still on protobuf 2.5.0).
- [HBASE-14004](#): Fix inconsistency between Memstore and WAL which may result in data in remote cluster that is not in the origin (Replication).
- [HBASE-18786](#): FileNotFoundException opening a StoreFile in a primary replica now causes a RegionServer to crash out where before it would be ignored (or optionally handled via close/reopen).
- [HBASE-17956](#): Raw scans will also read TTL expired cells.
- [HBASE-17017](#): Removed per-region latency histogram metrics.
- [HBASE-19483](#): Added ACL checks to RSGroup commands - On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands.
- [HBASE-19358](#): Added ACL checks to RSGroup commands (HBASE-19483): On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands. Improved stability of splitting log when do failover.
- [HBASE-18883](#): Updated our Curator version to 4.0 - Users who experience classpath issues due to version conflicts are recommended to use either the hbase-shaded-client or hbase-shaded-mapreduce artifacts.
- [HBASE-16388](#): Prevent client threads being blocked by only one slow region server - Added a new configuration to limit the max number of concurrent request to one region server.
- [HBASE-15212](#): New configuration to limit RPC request size to protect the server against very large incoming RPC requests. All requests larger than this size will be immediately rejected before allocating any resources.
- [HBASE-15968](#): This issue resolved two long-term issues in HBase: 1) Puts may be masked by a delete before them, and 2) Major compactions change query results. Offers a new behavior to fix this issue with a little performance reduction. Disabled by default. See the issue for details and caveats.
- [HBASE-13701](#): SecureBulkLoadEndpoint has been integrated into HBase core as default bulk load mechanism. It is no longer needed to install it as a coprocessor endpoint.
- [HBASE-9774](#): HBase native metrics and metric collection for coprocessors.
- [HBASE-18294](#): Reduce global heap pressure: flush based on heap occupancy.

Apache Hive/Hive on Spark/HCatalog

Apache Hive

The following changes are introduced to Hive in CDH 6.0.0, and are not backwards compatible:

- [UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting](#) on page 1248
- [Support for UNION DISTINCT](#) on page 1249
- [OFFLINE and NO_DROP Options Removed from Table and Partition DDL](#) on page 1250
- [DESCRIBE Query Syntax Change](#) on page 1250
- [CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names](#) on page 1250

- [Reserved and Non-Reserved Keyword Changes in HiveQL](#) on page 1250
- [Apache Hive API Changes in CDH 6.0.0](#) on page 1252
- [Apache Hive Configuration Changes in CDH 6.0.0](#) on page 1253
- [HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes](#) on page 1256
- [Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column](#) on page 1256
- [Hive Logging Framework Switched to SLF4J/Log4j 2](#) on page 1256
- [Deprecated Parquet Java Classes Removed from Hive](#) on page 1256
- [Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms](#) on page 1257
- [S3N Connector Is Removed from CDH 6.0](#) on page 1257
- [Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request](#) on page 1257
- [Support Added for Escaping Carriage Returns and New Line Characters for Text Files \(LazySimpleSerDe\)](#) on page 1258
- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1258

Changing Table File Format from ORC with the ALTER TABLE Command Not Supported in CDH 6

Changing the table file format from ORC to another file format with the ALTER TABLE command is not supported in CDH 6 (it returns an error).

UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting

Prior to this change, Hive performed implicit casts when data types from different type groups were specified in queries that use UNION ALL. For example, before CDH 6.0, if you had the two following tables:

Table "one"

```
+-----+-----+-----+
| one.col_1 | one.col_2 | one.col_3 |
+-----+-----+-----+
| 21        | hello_all | b         |
+-----+-----+-----+
```

Where col_1 datatype is int, col_2 datatype is string, and col_3 datatype is char(1).

Table "two"

```
+-----+-----+-----+
| two.col_4 | two.col_5 | two.col_6 |
+-----+-----+-----+
| 75.0      | abcde     | 45        |
+-----+-----+-----+
```

Where col_4 datatype is double, col_5 datatype is varchar(5), and col_6 datatype is int.

And you ran the following UNION ALL query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS
col_3 FROM two;
```

You received the following result set:

```
+-----+-----+-----+
| _u1.col_1 | _u1.col_2 | _u1.col_3 |
+-----+-----+-----+
| 75.0      | abcde     | 4         |
+-----+-----+-----+
```

| | | | |
|------|-------|---|--|
| 21.0 | hello | b | |
|------|-------|---|--|

Note that this statement implicitly casts the values from table `one` with the following errors resulting in data loss:

- `one.col_1` is cast to a `double` datatype
- `one.col_2` is cast to a `varchar(5)` datatype, which truncates the original value from `hello_all` to `hello`
- `one.col_3` is cast to a `char(1)` datatype, which truncates the original value from `45` to `4`

In CDH 6.0, no implicit cast is performed across different type groups. For example, `STRING`, `CHAR`, and `VARCHAR` are in one type group, and `INT`, `BIGINT`, and `DECIMAL` are in another type group, and so on. So, in CDH 6.0 and later, the above query that uses `UNION ALL`, returns an exception for the columns that contain datatypes that are not part of a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
 - The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.
- **Behavior in CDH 6:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
 - The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:
 - `ENABLE | DISABLE NO_DROP [CASCADE]`
 - `ENABLE | DISABLE OFFLINE`
 - `ALTER TABLE ... IGNORE PROTECTION`
- The following support has also been removed from the `HiveMetastoreClient` class:

The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, `data`). *Non-reserved keywords* can be used as table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|---------|------------|------------|----------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |
| START | | | |

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|---------|--------|--------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |

| | | | |
|-----------|----------|-----------|-----------|
| BOOLEAN | BOTH | BY | CREATE |
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|---------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLMTIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|---------------|---------|-------------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |
| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252
- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a `CLOB` data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like "=", "<>", and "!=" might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with `CLOB` data types. There is no equivalent "<>" operator that is compatible

with `CLOB`. So there is no equivalent operator for the above example that uses the "`<>`" inequality operator. The equivalent for "`=`" is the `LIKE` operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253
- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with `GROUP BY` and `ORDER BY` Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(`hive.server2.enable.impersonation`\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on `hive.enforce.bucketing`](#) and the [topic on `hive.enforce.sorting`](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.
3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned table but do not filter on the partition column. | <code>false</code> |
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)
- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (`hive.server2.enable.impersonation`) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`
 - **Description:** Sets the file format in which a query's intermediate results are stored.
3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:

```
org.apache.hive.service.cli.thrift
```

To the following *new* namespace:

```
org.apache.hive.service.rpc.thrift
```

- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale of 5, the value returned for zero was returned as 0. *Now*, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the `INPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat` and set the `OUTPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`
- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanup(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|--|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |
| REF_GENERATION | Specifies how values in the <code>SELF_REFERENCING_COL_NAME</code> column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the `SerDe` property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, `'r'` or `'n'` cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the [LazySerDeParameters](#) class. For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

CDH 6.3.1 introduces no new incompatible changes for Hue.

Apache Impala

Port Change for SHUTDOWN Command

The `SHUTDOWN` command for shutting down a remote server used the backend port in CDH 6.1. Starting in CDH 6.2, the command uses the KRPC port, e.g. `:shutdown('host100:27000')`.

Apache Kafka

Incompatible Changes Introduced in CDH 6.3.1

CDH 6.3.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.3.0

Default Consumer Group ID Change

The default consumer group ID has been changed from the empty string (`"`) to `null`. Consumers that use the new default group ID will not be able to subscribe to topics, and fetch or commit offsets. The empty string as consumer group ID is deprecated but will be supported until a future major release. Old clients that rely on the empty string group id will now have to explicitly provide it as part of their consumer configuration. For more information, see [KIP-289](#).

Incompatible Changes Introduced in CDH 6.2.1

CDH 6.2.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.2.0



Warning: Kafka in CDH 6.2.0 is based on Apache Kafka 2.1.0, which contains a change to the internal schema used to store consumer offsets. As a result of this change, downgrading Kafka to a version lower than CDH 6.2.0 is **NOT** possible once Kafka has been upgraded to CDH 6.2.0 or higher.

Default Behaviour Changes

Kafka CDH 6.2.0. Introduces the following default behaviour changes:

- Unclean leader election is automatically enabled by the controller when `unclean.leader.election.enable` config is dynamically updated by using per-topic config override.
- Diagnostic data bundles collected by Cloudera Manager from now on include information on Kafka topics. The bundle includes the information exposed by the following two commands:
 - `kafka-topics --describe`
 - `kafka-topics --list`

Incompatible Changes Introduced in CDH 6.1.1

CDH 6.1.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.1.0

Scala-based Client API Removed

Scala-based clients were deprecated in a previous release and are removed as of CDH 6.1.0.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are effected:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Default Behaviour Change

[KAFKA-7050](#): The default value for `request.timeout.ms` is decreased to 30 seconds. In addition, a new logic is added that makes the `JoinGroup` requests ignore this timeout.

Incompatible Changes Introduced in CDH 6.0.1

CDH 6.0.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.0.0

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see the previous entry). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`
- `kafka.tools.ExportZkOffset`
- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- `GroupCoordinatorNotAvailableException`
- `GroupLoadInProgressException`
- `NotCoordinatorForGroupException`
- `kafka.common.KafkaStorageException`

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Apache Kudu

There are no incompatible changes in this release.

Apache Oozie

There are no incompatible changes in this release.

Apache Parquet

Packages and Group ID Renamed

As a part of the Apache incubation process, all Parquet packages and the project's group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|-----------------------------------|
| Java Package Names | <code>parquet.*</code> | <code>org.apache.parquet.*</code> |
| Group ID | <code>com.twitter</code> | <code>org.apache.parquet</code> |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update `*.java` files:

| Before | After |
|--------------------------------------|---|
| <code>import parquet.*</code> | <code>import org.apache.parquet.*</code> |

Update `pom.xml`:

| Before | After |
|---|--|
| <pre> <dependency> <groupId> com.twitter </groupId> <version> \${parquet.version} </version> </dependency> </pre> | <pre> <dependency> <groupId> org.apache.parquet </groupId> <version> \${parquet.version} </version> </dependency> </pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestedSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestedSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Pig

The following change is introduced to Pig in CDH 6.0 and is not a backwards compatible change. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0 JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 37: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|--|---------------------------------|---------|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |
| VAR (stats) | Generates the variance of a set of values. | variance | None |

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|---|
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 479. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 479. |
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way to filter using a logical disjunction over many values. | IN | None |

For more information about using Hive UDFs, see https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 38: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|-----------------------------|---|---|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |
| Examples: | <pre>register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); }</pre> | <pre>define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc));</pre> |

Although DataFu `StreamingQuantile` and `StreamingMedian` might appear to match Hive's `percentile_approx` function, Pig cannot consume `percentile_approx`.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 39: DataFu Functions with No Hive UDF Equivalent

| | | |
|----------------------------|-----------------------------|--------------------------------|
| AppendToBag (bags) | AssertUDF (util) | BagConcat (bags) |
| BagGroup (bags) | BagLeftOuterJoin (bags) | BagSplit (bags) |
| BoolToInt (util) | CountEach (bags) | DistinctBy (bags) |
| EmptyBagToNull (bags) | EmptyBagToNullFields (bags) | Enumerate (bags) |
| FirstTupleFromBag (bags) | HaversineDistInMiles (geo) | IntToBool (util) |
| MarkovPairs | NullToEmptyBag (bags) | PageRank (linkanalysis) |
| PrependToBag (bags) | ReservoirSample (sampling)* | ReverseEnumerate (bags) |
| SampleByKey (sampling)* | SessionCount (sessions) | Sessionize (sessions) |
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with TABLESAMPLE in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

The following changes are introduced in CDH 6.1

In CDH 6.1 Cloudera Search was rebased on Apache Solr 7.4.

Deprecations

- Enabling/disabling `autoAddReplicas` cluster-wide with the API is deprecated. Use `suspend/resume` trigger APIs with `name=".auto_add_replicas"` instead.
- In the `ReplicationHandler`, the `master.commitReserveDuration` sub-element is deprecated. Configure a direct `commitReserveDuration` element instead for use in all modes (leader, follower, cloud).

Removals

- The old Leader-In-Recovery implementation (implemented in Solr 4.9) has been removed and replaced. Solr supports rolling upgrades from old 7.x versions of Solr to future 7.x releases until the last release of the 7.x major version. This means that to upgrade to Solr 8, you will have to be on Solr 7.3 or higher.
- The throttling mechanism used to limit the rate of processed autoscaling events has been removed. This deprecates the `actionThrottlePeriodSeconds` setting in the `set-properties` command of Autoscaling API. Use the `triggerCooldownPeriodSeconds` parameter to pause event processing.
- The `RunExecutableListener` event listener was removed for security reasons. If you want to listen to events caused by updates and commits, or you want to optimize, write your own listener as native Java class as part of a Solr plugin.

For more information see the [Apache Solr 7.4 Release Notes](#).

The following changes are introduced in CDH 6.0

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.
- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

Apache Sentry contains the following incompatible change in CDH 6.0.0:

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.
- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.
- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.
Since compile-time type-safety in Python and R is not a language feature, the concept of `Dataset` does not apply to these languages' APIs. Instead, `DataFrame` remains the primary programming abstraction.
- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

The following changes were introduced in CDH 6.0, and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0. Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a CHAR or VARCHAR column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to `true` to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPSWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with `hcatalog` jobs or when `hive import` with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile
format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with `--hcatalog-table <HIVE_VIEW>`

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the `--hcatalog-table` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table"
--hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using EscapeUtils. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySQL after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of `--input-null-string` and `--input-null-non-string` options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using `--direct` connector and a MySQL database

The MySQL direct connector does not support the `--null-string`, `--null-non-string`, `--input-null-string`, and `--input-null-non-string` options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

There are no incompatible changes in this release.

Timezone Names Unsupported in Impala in CDH 6.3.3

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|------------|-------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |

| | |
|--|--------------------------------|
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |

| | |
|---|----------------------|
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |

| | |
|------------------------------|------------------------------|
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |

| | |
|--|------------------------------|
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |
| FJST | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |

| | |
|-------------------------------|-------------------|
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |

| | |
|-----------------------------|----------------------|
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |

| | |
|--------------------------------|----------------------|
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |

| | |
|---------------------------------|----------------------|
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |

| | |
|-----------------------------|------------------------|
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymusk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |
| Srednekolymusk Time | Asia/Srednekolymusk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |

| | |
|---------------------|--------------------|
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |

| | |
|-------------------------------|--------------------|
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.3.3

The following sections describe the known issues in CDH 6.3.3, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-10000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.



Important: If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can workaround the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|----------------------------------|---|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.
5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
10. Click **Save Changes**.
11. Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.
10. Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|-----------------------|---|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

- (1) Ensure that the kernel is up to date.
 - **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
 - **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
 - **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

There are no known issues in this release of Apache Accumulo.

Apache Crunch Known Issues



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

Apache Flume Known Issues

The following section describes known issues and workarounds in Flume, as of the current production release.

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to false.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x
- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

HDFS

Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH
- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.
- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:
 - Install CDH using Cloudera Manager; *or*
 - Start the NFS gateway as root; *or*
 - [Start the NFS gateway without using packages](#); *or*
 - You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the portmap.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to 777 on .snapshot directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

Permissions for `dfs.namenode.name.dir` incorrectly set

Hadoop daemons should set permissions for the `dfs.namenode.name.dir` (or `dfs.name.dir`) directories to `drwx-----` (700), but in fact these permissions are set to the file-system default, usually `drwxr-xr-x` (755).

Workaround: Use `chmod` to set permissions to 700.

Affected Versions: All CDH versions

Apache Issue: [HDFS-2470](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
java.lang.NullPointerException at
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler
- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

Using OpenJDK 11 on CDH6.3 and above requires re-installation of YARN MapReduce Framework JARs

Because several Java internal APIs are removed in JDK11, using older versions of MR Framework JARs will fail MR/Hive jobs, with the following error:

```

...
2019-07-18 14:54:52,483 ERROR [main] org.apache.hadoop.mapreduce.v2.app.MRAppMaster:
Error starting MRAppMaster
java.lang.NoSuchMethodError: sun.nio.ch.DirectBuffer.cleaner()Lsun/misc/Cleaner;
    at org.apache.hadoop.crypto.CryptoStreamUtils.freeDB(CryptoStreamUtils.java:41)
    at org.apache.hadoop.crypto.CryptoInputStream.freeBuffers(CryptoInputStream.java:687)

    at org.apache.hadoop.crypto.CryptoInputStream.close(CryptoInputStream.java:320)
    at java.base/java.io.FilterInputStream.close(FilterInputStream.java:180)
...

```

Workaround:

1. Go to the YARN service.
2. Select Actions > Install YARN MapReduce Framework JARs and click Install YARN MapReduce Framework JARs
3. To verify, you will find the new MR Framework JARs under the MR Application Framework Path (default: `/user/yarn/mapreduce/mr-framework/`) For example:

```

..
hdfs dfs -ls /user/yarn/mapreduce/mr-framework/
Found 5 items
-rw-r--r-- 332 yarn hadoop 215234466 2018-07-19 11:40
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.0-mr-framework.tar.gz
-rw-r--r-- 97 yarn hadoop 263033197 2018-05-18 18:38
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.x-mr-framework.tar.gz
-rw-r--r-- 331 yarn hadoop 222865312 2018-11-08 14:39
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.1.0-mr-framework.tar.gz
-rw-r--r-- 327 yarn hadoop 232020483 2019-02-25 22:46
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.2.0-mr-framework.tar.gz
-rw-r--r-- 326 yarn hadoop 234641649 2019-07-23 15:49
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.3.0-mr-framework.tar.gz
...

```

Cloudera Bug: CDH-81350

NodeManager fails because of the changed default location of container executor binary

The default location of container-executor binary and .cfg files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`. Because of this change, if you did not have the mount options `-noexec` and `-nosuid` set on `/opt`, the NodeManager can fail to start up as these options are set on `/var`.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the `-noexec` and `-nosuid` mount options on `/var` or change the container-executor binary and .cdf path using the `CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR` environment variable.

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, Enable Fair Scheduler Continuous Scheduler is turned off by default.

Workaround: Turn off `Enable Fair Scheduler Continuous Scheduling` in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on `Fair Scheduler Assign Multiple Tasks`.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated `mapred-site.xml` that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

GPU or Custom Resource Type User Jobs can Fail After Recovery

When a GPU or other custom resource goes offline when it has containers that use that particular resource and they have not reached completion, after the restart the application will start to recover. However, if the resource is not available anymore the job that uses that resource will fail.

Workaround: N/A

Affected Versions: CDH 6.2.0, CDH 6.3.0

Cloudera Issue: CDH-77649

Apache HBase Known Issues

The following section describes known issues and workarounds in HBase, as of the current production release.

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.
2. Find the **Enable Audit Collection** property and clear it.
3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x
- HDP 3.1.5
- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.
 - If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:
 - Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
 - At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x
- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for hbase-site.xml →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom hbase-site →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each `RegionServer` under the `RegionServer/Server JMX metrics` endpoint. When short circuit reads are not enabled, this metric will be zero. When short circuit reads are enabled and the data locality for this `RegionServer` is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Default limits for `PressureAwareCompactionThroughputController` are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP
- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4
- **Workaround:**
 - Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
 - An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a DataNode can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different DataNodes, meaning that there will be one RegionServer per DataNode per HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

IntegrationTestReplication fails if replication does not finish before the verify phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

ExportSnapshot or DistCp operations may fail on the Amazon s3a:// protocol

`ExportSnapshot` or `DistCP` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO later. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

Export to Azure Blob Storage (the `wasb://` or `wasbs://` protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController postOperation problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive/HCatalog/Hive on Spark/Hive Metastore Known Issues

This topic contains:

- [Hive Known Issues](#)
- [HCatalog Known Issues](#)
- [Hive on Spark Known Issues](#)
- [Hive Metastore Known Issues](#) on page 511

Hive Known Issues

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Query with an empty WHERE clause problematic if vectorization is off

Specific WHERE clauses cause problems if vectorization is off. For example,

```
SELECT COUNT (DISTINCT cint) FROM alltypesorc WHERE cstring1;
SELECT 1 WHERE 1;
```

If vectorization is turned on and no rules turn off the vectorization, queries run as expected.

Workaround: Rewrite queries with casts or equals.

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-15408](#)

Cloudera Issue: CDH-81649

Query with DISTINCT can fail if vectorization is on

A query can fail when vectorization is turned on, the query contains DISTINCT, and other rules do not turn off the vectorization. A query-specific error message appears, for example:

```
Error: Error while compiling statement: FAILED: SemanticException
org.apache.hadoop.hive.ql.metadata.HiveException: The column KEY._col2:0._col0 is not
in the vectorization context column map {KEY._col0=0, KEY._col1=1, KEY._col2=2}.
(state=42000,code=40000)
```

Workaround: Turn off vectorization for such queries as follows:

```
set hive.vectorized.execution.enabled=false;
```

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-19032](#)

Cloudera Issue: CDH-81341

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: Arithmetic exception [divide by] 0. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the SELECT clause on large values in columns with the data type of BIGINT might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are BIGINT data types in the SELECT clause of the query, incorrect

results might be returned. Comparison operators include `==`, `!=`, `<`, `<=`, `>`, and `>=`. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference of values in such columns is out of range for a `LONG` (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 - (-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a `LONG` (64-bit) data type can hold.

Workaround: Use a `DECIMAL` type instead of `BIGINT` for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the `ORDER BY` clause is not supported for `SELECT *` queries

When column positions are specified in `ORDER BY` clauses, they are not honored for `SELECT *` queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

`ALTER PARTITION ... SET LOCATION` does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use `ALTER PARTITION ... SET LOCATION` on S3 or between S3 and HDFS. The rest of the `ALTER PARTITION` commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Cannot create archive partitions with external HAR (Hadoop Archive) tables

```
ALTER TABLE ... ARCHIVE PARTITION is not supported on external tables.
```

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types `Server` and `URI` are not supported in "`SHOW GRANT ROLE roleName on OBJECT objectName`" statements

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

Change in Precision of trigonometric functions for Hive Queries with JDK 11

If your Hive queries use trigonometric functions (such as degrees-to-radians, radians-to-degrees, or sin) there may be a difference in the output of the 15th decimal place.

Cloudera Bug: CDH-81322

Logging differences create Supportability Issues

In the event you need Apache Hive support from Cloudera, the availability of logs is critical. Some CDH releases do not enable log4j2 logging for Hive by default. Because of this, logs are not generated. Furthermore, the specified CDH releases are not configured to remove old log files to make room for new ones. This can cause the new logs to be lost. When Hive logs are missing, Support cannot troubleshoot Hive problems efficiently.

Components affected: Hive

Products affected: Hive

Releases affected:

- CDH 6.1
- CDH 6.2
- CDH 6.3

Users affected: Hive users

Severity: Medium

Impact: The absence of Hive log files causes delays in troubleshooting Hive problems.

Action required: Manually configure log4j2 logging, and delete old log files to make room for new ones.

1. Open Cloudera Manager.
2. Select **Clusters > HIVE**.
3. Click the **Configuration** tab.
4. In the Search field, enter Hive Metastore Server Logging Advanced Configuration Snippet (Safety Valve).
5. Add the following XML to the field (or switch to Editor mode, and enter each property and its value in the fields provided).

```
<property>
  <name>rootLogger.appenderRefs</name>
  <value>root, console, DRFA, PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.name</name>
  <value>org.apache.hadoop.hive.q1.log.PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.level</name>
  <value>DEBUG</value>
</property>
<property>
  <name>appender.DRFA.filePattern</name>
  <value>${log.dir}/${log.file}.%i</value>
</property>
<property>
  <name>appender.DRFA.strategy.fileIndex</name>
  <value>min</value>
</property>
```

6. In the Search field, enter HiveServer2 Logging Advanced Configuration Snippet (Safety Valve).
7. Add the XML properties from step 5.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-384: Logging differences in CDH 6 create Supportability Issues](#)

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

Hive on Spark (HoS) Known Issues

A query fails with `IllegalArgumentException` Size requested for unknown type: `java.util.Collection`

An example of a query that fails due to this issue is:

```
WITH t2 AS
(SELECT array(1,2) AS c1
UNION ALL SELECT array(2,3) AS c1)
SELECT collect_list(c1)
FROM t2
```

Workaround: Create a table to store the array data.

Affected Versions: 6.3.x, 6.2.x, 6.1.x

Cloudera Issue: CDH-80169

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form "client.RpcRetryingCaller: Call exception...", then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hive Metastore Known Issues

HMS Read Authorization: `get_num_partitions_by_filter` Ignores Authorization

A user can get the number of partitions of a table regardless of the user's permissions

Hue Known Issues

The following sections describe known issue and workaround in Hue, as of the current production release.

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - The *Add Description* field in the Table schema browser does not sanitize user inputs as expected.
- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower

- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower
- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls

Issuing DDL statements using Hue's Impala editor or invoking Hue's "Refresh Cache" function in the left-side metadata browser results in Hue issuing INVALIDATE METADATA calls to the Impala service. This call is expensive and can result in a significant system impact, up to and including full system outage, when repeated in sufficient volume. This has been corrected in HUE-8882.

Components affected:

- Hue
- Impala

Products affected:

- Cloudera Enterprise 5
- Cloudera Enterprise 6

Releases affected:

- CDH 5.15.1, 5.15.2
- CDH 5.16.x
- CDH 6.1.1
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: End-users using Impala editor in Hue.

Severity: High

Impact: Users running DDL statements using the Hue Impala editor or invoking Hue's Refresh Cache function causes INVALIDATE METADATA commands to be sent to Impala. Impala's metadata invalidation is an expensive operation

and could cause impact on the performance of subsequent queries, hence leading to the potential for significant impact on the entire cluster, including the potential for whole-system outage.

Action required:

- CDH 6.x customers: Upgrade to CDH 6.3.4 that contains the fix.
- CDH 5.x customers: Contact Cloudera Support for further assistance.

Apache issue: [HUE-8882](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls](#)

Invalid S3 URI error while accessing S3 bucket

The Hue Load Balancer merges the double slashes (//) in the S3 URI into a single slash (/) so that the URI prefix `"/filebrowser/view=S3A://"` is changed to `"/filebrowser/view=S3A/"`. This results in an error when you try to access the S3 buckets from the Hue File Browser through the port 8889.

The Hue web UI displays the following error: "Unknown error occurred".

The Hue server logs record the "ValueError: Invalid S3 URI: S3A" error.

Workaround:

To resolve this issue, add the following property in the Hue Load Balancer Advanced Configuration Snippet:

1. Sign in to Cloudera Manager as an Administrator.
2. Go to **Clusters > Hue service > Configurations > Load Balancer** and search for the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
3. Specify `MergeSlashes OFF` in the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
4. Click **Save Changes**.
5. Restart the Hue Load Balancer.

You should be able to load the S3 browser from both 8888 and 8889 ports.

Alternatively, you can use the Hue server port 8888 instead of the load balancer port 8889 to resolve this issue.

Error while rerunning Oozie workflow

You may see an error such as the following while rerunning an already executed and finished Oozie workflow through the Hue web interface: `E0504: App directory [hdfs://cdh/user/hue/oozie/workspaces/hue-oozie-1571929263.84] does not exist.`

Workaround:

To resolve this issue, add the following property in the Hue Load Balancer Advanced Configuration Snippet:

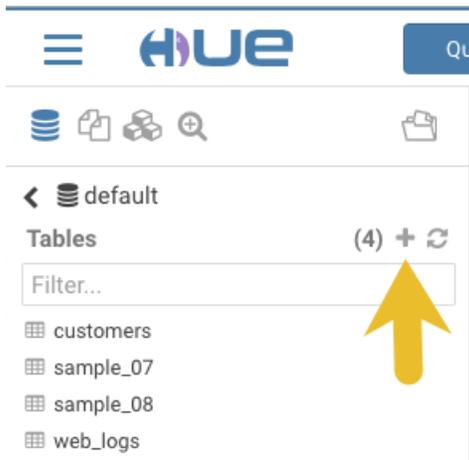
1. Sign in to Cloudera Manager as an Administrator.
2. Go to **Clusters > Hue service > Configurations > Load Balancer** and search for the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
3. Specify `MergeSlashes OFF` in the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
4. Click **Save Changes**.
5. Restart the Hue Load Balancer.

Table Browser Must Be Refreshed to View Tables Created with the Data Import Wizard

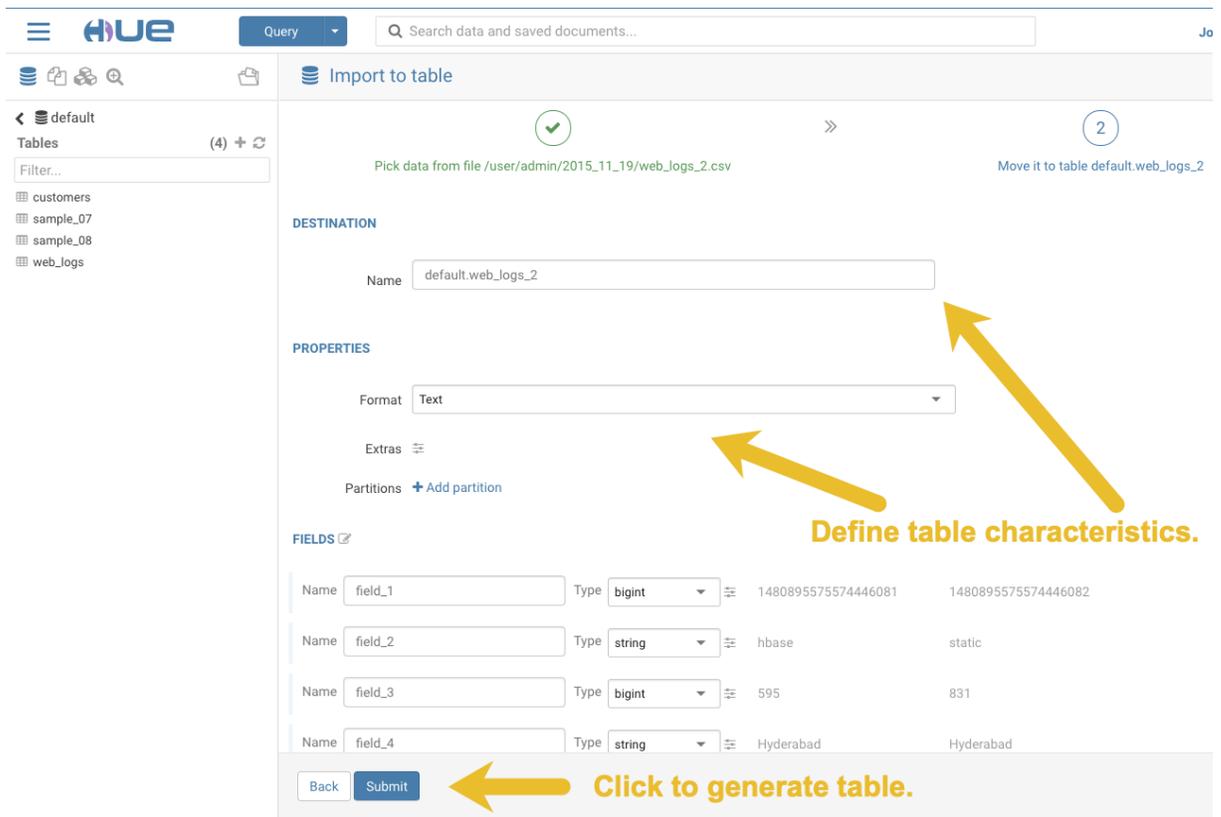
When you create a new table from a file by using the Data Import Wizard, the newly created table columns do not display in the Table Browser until you refresh it.

For example:

1. Create a table from the sample file `web_logs_2.csv` by clicking the plus sign in the left panel, which launches the Data Import Wizard:



2. After you define the table, click **Submit** to generate the new table:

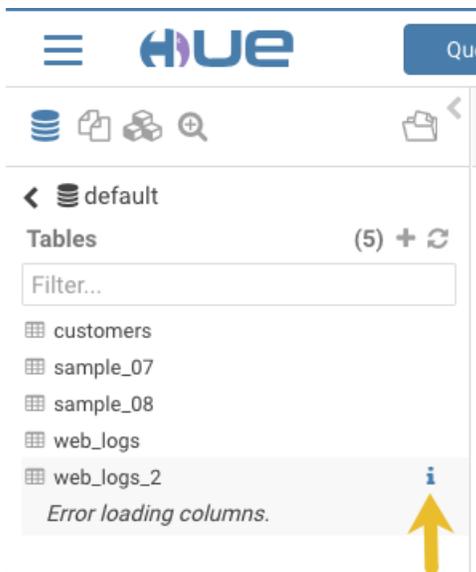


3. After you generate the new table, you can see it listed on the left assist panel, but when you click the table name to display the columns, an error displays:



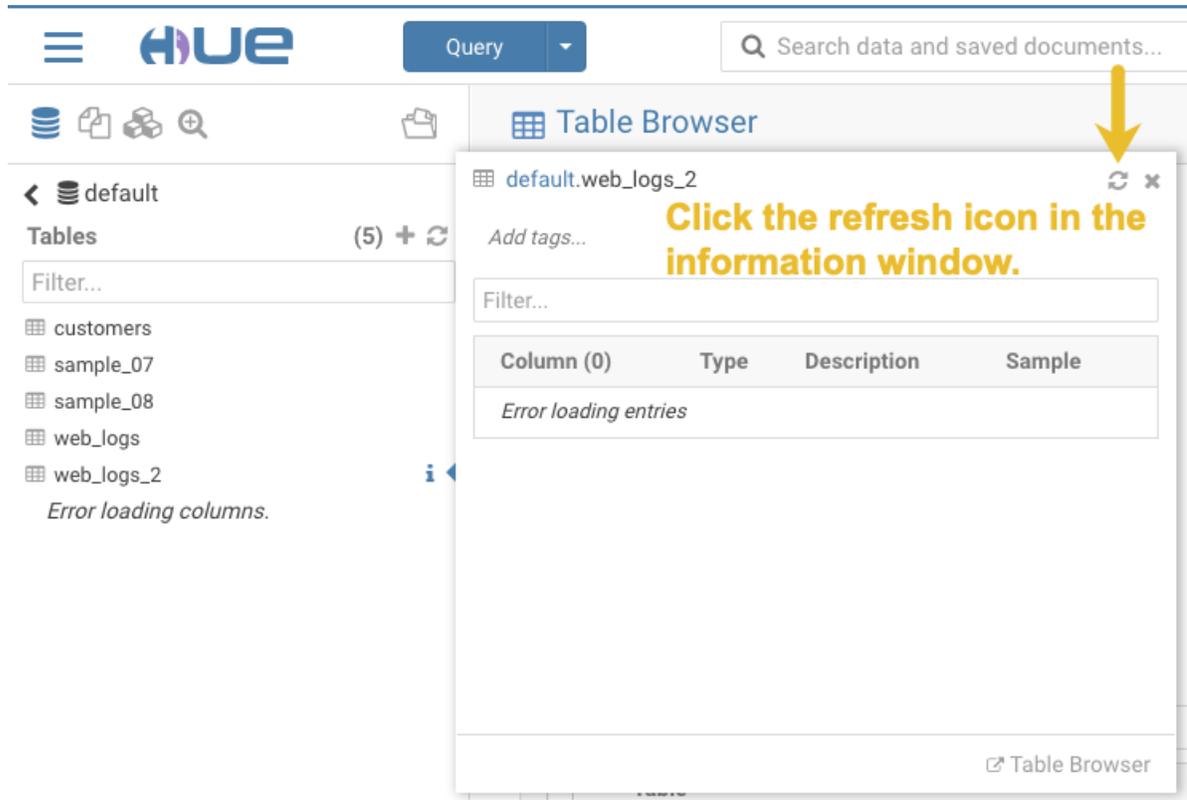
Workaround:

1. Click the information icon that is adjacent to the new table:



Click the information icon.

2. In the information window that opens, click the refresh icon in the upper right corner to view the table columns:



Using the refresh icon in the information window is the least expensive way to refresh the page so performance is not affected.

Affected Version(s): CDH 6.2.0

Cloudera Issue: CDH-77238

Hue does not support the Spark App

Hue does not currently support the Spark application.

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname`, only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \{(string)\} [=:].*` And the replacement could be for example: `secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

.

Products affected:

- CDP Private Cloud Base
- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: [CVE-2021-28131](#)

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

System-wide auth-to-local mapping not applied correctly to Kudu service account

Due to system `auth_to_local` mapping, the principal may be mapped to some local name.

When running with Kerberos enabled, you may hit the following error message where `<random-string>` is some random string which doesn't match the primary in the Kerberos principal.

```
WARNINGS: TransmitData() to X.X.X.X:27000 failed: Remote error: Not authorized:
{username='<random-string>', principal='impala/redacted'} is not allowed to access
DataStreamService
```

Workaround: Start Impala with the `--use_system_auth_to_local=false` flag to ignore the system-wide `auth_to_local` mappings configured in `/etc/krb5.conf`.

Affected Versions: CDH 5.15, CDH 6.1 and higher

Apache Issue: [KUDU-2198](#)

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate
section memory!
terminate called after throwing an instance of
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>
>'
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max
echo 2000000 > /proc/sys/kernel/pid_max
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)

Breakpad minidumps can be very large when the thread count is high

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the `impalad` daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Incorrect result due to constant evaluation in query with outer join

An `OUTER JOIN` query could omit some expected result rows due to a constant such as `FALSE` in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
  INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
  RIGHT JOIN alltypes a3 ON a1.year = a1.bigint_col;
+-----+
| Explain String |
+-----+
| Estimated Per-Host Requirements: Memory=1.00KB VCores=1 |
| 00:EMPTYSET |
+-----+
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a `LIKE` operator is an escaped `\%` character, it does not match a `%` final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: impala::Coordinator::ValidateCollectionSlots

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Configuration needed for Flume to be compatible with Impala

For compatibility with Impala, the value for the Flume HDFS Sink `hdfs.writeFormat` must be set to `Text`, rather than its default value of `Writable`. The `hdfs.writeFormat` setting must be changed to `Text` before creating data files with Flume; otherwise, those files cannot be read by either Impala or Hive.

Resolution: This information has been requested to be added to the upstream Flume documentation.

Affected Versions: All CDH 6 versions

Cloudera Issue: CDH-13199

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null", "string"]` instead of `["string", "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Set limits on size of expression trees

Very deeply nested expressions within queries can exceed internal Impala limits, leading to excessive memory usage.

Workaround: Avoid queries with extremely large expression trees. Setting the query option `disable_codegen=true` may reduce the impact, at a cost of longer query runtime.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4551](#)

Impala does not support running on clusters with federated namespaces

Impala does not support running on clusters with federated namespaces. The `impalad` process will not start on a node running such a filesystem based on the `org.apache.hadoop.fs.viewfs.ViewFs` class.

Workaround: Use standard HDFS on all Impala nodes.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-77](#)

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for impalad_flags** to specify the load balancer address with the HiveServer2 port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

Unable to Correctly Parse the Terabyte Unit

Impala does not support parsing strings that contain "TB" when used as a unit for terabytes. The flags related to memory limits may be affected, such as the flags for scratch space and data cache.

Workaround: Use other supported units to specify values, e.g. GB or MB.

Affected Versions: CDH 6.3.x and lower versions

Fixed Versions: CDH 6.4.0

Apache Issue: [IMPALA-8829](#)

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

CASTing scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.3.1

Apache Kafka Known Issues

The following sections describe known issues and workarounds in Kafka, as of the current production release.

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to `true`.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: KAFKA-2561

Cloudera Issue: None

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions: All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

[Apache Kudu Known Issues](#)

The following sections describe known issues and workarounds in Kudu, as of the current production release.

Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement

DDL and DML operations can accumulate in the Kudu tablet replica's write ahead log (WAL) during normal operation. Upon the shutdown of a tablet replica (for example, right before removing the replica), information on the accumulated operations (first 50) are printed into the tablet server's INFO log file.

A bug was introduced with the fix for KUDU-2690. The code contains a flipped if-condition that results in de-referencing of an invalid pointer while reporting on a pending ALTER TABLE operation in the tablet replica's WAL. The issue manifests itself in kudu-tserver processes crashing with SIGSEGV (segmentation fault).

The occurrence of the issue is limited to scenarios which result in accumulating at least one pending ALTER TABLE operation in the tablet replica's WAL at the time when the tablet replica is shut down. An example scenario is an ALTER TABLE request (for example, adding a column) immediately followed by a request to drop a tablet (for example, drop a range partition). Another example scenario is shutting down a tablet server while it's still processing an ALTER TABLE request for one of its tablet replicas. A slowness in file system operations increases the chances for the issue to manifest itself.

Apache issue: [KUDU-2690](#)

Component affected: Kudu

Products affected: CDH

Releases affected:

- CDH 6.2.0, 6.2.1
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Kudu clusters with the impacted releases.

Impact: In the worst case, multiple kudu-tserver processes can crash in a Kudu cluster, making data unavailable until the affected tablet servers are started back.

Severity: High

Action required:

- **Workaround:** Avoid dropping range partitions and tablets right after issuing ALTER TABLE request. Wait for the pending ALTER TABLE requests to complete before dropping tablets or shutting down tablet servers.
- **Solution:** Upgrade to CDH 6.3.4 or CDP

Knowledge article: For the latest update on this issue see the corresponding Knowledge article:

[TSB 2020-449: Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement](#)

You get "The user 'kudu' is not part of group 'hive' on the following hosts: " warning by the Host Inspector

If you are using fine grained authorization for Kudu, and you are also using Kudu-HMS integration with HDFS-Sentry sync, then you may get the "The user 'kudu' is not part of group 'hive' on the following hosts: " warning while upgrading to CDH 6.3.

Workaround: Run the following command on all the HMS servers:

```
usermod -aG hive kudu
```

Affected Versions: CDH 6.3 / Kudu 1.10

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

The following sections describe known issues and workarounds in Oozie, as of the current production release.

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in this release.

Apache Pig Known Issues

There are no known issues in this release.

Cloudera Search Known Issues

The following sections describe known issues and limitations in Search, as of the current production release.

Splitshard of HDFS index checks local filesystem and fails

When performing a shard split on an index that is stored on HDFS, `SplitShardCmd` still evaluates free disk space on the local file system of the server where Solr is installed. This may cause the command to fail, perceiving that there is no adequate disk space to perform the shard split.

Workaround: None

Affected versions: All

Default Solr core names cannot be changed (limitation)

Although it is technically possible to give user-defined Solr core names during core creation, it is to be avoided in the context of Cloudera Search. Cloudera Manager expects core names in the default "collection_shardX_replicaY" format. Altering core names results in Cloudera Manager being unable to fetch Solr metrics for the given core and this, eventually, may corrupt data collection for co-located core, or even shard and server level charts.

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with CrunchIndexerTool, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the MapReduceIndexerTool nor the HBaseMapReduceIndexerTool

The MapReduceIndexerTool and the HBaseMapReduceIndexerTool can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the MapReduceIndexerTool or HBaseMapReduceIndexerTool. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the “Browse” and “Spell” Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irreversibly corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool` multiple times may produce duplicate entries in a collection.

Repeatedly running the `MapReduceIndexerTool` on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the `HBaseMapReduceIndexerTool` unless it is run with more than zero reducers.

Workaround: To avoid this issue, use `HBaseMapReduceIndexerTool` with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139

Apache Sentry Known Issues

The following sections describe known issues and workarounds in Sentry, as of the current production release.

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.

Affected Versions:

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694

GRANT/REVOKE operations could fail if there are too many concurrent requests

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.

Affected Versions: CDH 5.13.0 and above

Apache Issue: [SENTRY-1855](#)

Cloudera Issue: CDH-56553

Creating large set of Sentry roles results in performance problems

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.

Affected Versions: CDH 5.13.0 and above

Cloudera Issue: CDH-59010

Users can't track jobs with Hive and Sentry

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above

Cloudera Issue: CDH-22890

Column-level privileges are not supported on Hive Metastore views

`GRANT` and `REVOKE` for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

`SELECT` privilege on all columns does not equate to `SELECT` privilege on table

Users who have been explicitly granted the `SELECT` privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as `SELECT COUNT (1)` or `SELECT COUNT (*)` will not work even if you have the `SELECT` privilege on all columns.

There is one exception to this. The `SELECT * FROM TABLE` command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The `EXPLAIN SELECT` operation works without table or column-level privileges

Users are able to run the `EXPLAIN SELECT` operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types `Server` and `URI` are not supported in `SHOW GRANT ROLE roleName on OBJECT objectName`

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|--------------------------|---------------------------------|
| hdfs://absolute/path/ | hdfs://relative/path |
| s3a://bucketname/ | s3a://bucketname |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6.3.x. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

RDD.repartition() has different failure handling in Spark 2.4 and may cause job failures

The `RDD.repartition()` transformation, which reshuffles data in the RDD randomly to create either more or fewer partitions and then balances it across the partitions, was using a round-robin method to distribute data that caused incorrect answers to be returned for RDD jobs. This issue has been corrected, but it introduced a behavior change in RDD job failure handling. Now, Spark actively fails a job if there is a fetch failure that was caused by a node failure after repartitioning.

Workaround: Use the `RDD.checkpoint()` method to save the intermediate RDD data to HDFS. First, call `SparkContext.setCheckpointDir(directory: String)` to set the checkpoint directory where the intermediate data will be saved. Note that the directory must be an HDFS path. Then mark the RDD for checkpointing by calling `RDD.checkpoint()` when you use the `RDD.repartition()` transformation.

Apache Issue: [SPARK-23243](#)

Cloudera Issue: CDH-76413

Structured Streaming exactly-once fault tolerance constraints

In Spark Structured Streaming, the exactly-once fault tolerance for `file sink` is valid only for files that are in the manifest. These files are located in the `_spark_metadata` subdirectory of the `file sink` output directory. Only process files that have file names starting with digits. Other temporary files can also appear in this directory, but they should not be processed. Typically, these temporary file names start with a period (".").

You can list the valid manifest files, excluding the temporary files, by using a command like the following, which assumes your output directory is located at `/tmp/output`. As the appropriate user, run the following command to list the valid manifest files:

```
hadoop fs -ls /tmp/output/_spark_metadata/[0-9]*
```

Workaround: None

Affected Versions: CDH 6.1.0 and higher

Cloudera Issue: CDH-75191

Spark SQL does not respect size limit for the varchar type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's `client` mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

Apache Sqoop Known Issues

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (doc import + `--as-parquetfile`) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (`sqoop import --as-parquetfile`) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \${CONDITIONS}" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/5bbcac42-5d69-4e46-88c2-17dbedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a `--target-dir` which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

There are no known issues in this release.

CDH 6.3.2 Release Notes



Important: CDH 6.3.2 has been replaced with the 6.3.2-patch4071 hotfix release that contains a fix for the issue described in the [TSB 2020-432: Potential HDFS data loss due to snapshot usage](#) Knowledge Base article.

For information about CDH 6.3.x releases, see the [CDH 6.3.x Release Notes](#).

The following topic describes the fixed issues in the original CDH 6.3.2:

Fixed Issues in CDH 6.3.2

CDH 6.3.2 fixes the following issue:

Kudu cannot distribute libnuma (dependency of memkind)

In this release the NVM cache implementation in Kudu has been changed to dynamically link memkind at runtime using `dlopen()`.

Affected Versions: CDH 6.3.0, 6.3.1

Fixed Versions: 6.3.2

Apache Issue: [KUDU-2990](#) - If you want support for Kudu's NVM (non-volatile memory) block cache, then you must install the `memkind` library by running one of the following commands for the corresponding platform:

- – RHEL/CentOS:

```
sudo yum install memkind
```

- Ubuntu or Debian:

```
sudo apt-get install libmemkind0
```

- SLES:

```
sudo zypper install memkind
```



Note: For Kudu's NVM block cache to work properly, the `memkind` library should be of version 1.8.0 or newer.

If the `memkind` package provided with the Linux distribution is too old, you can build and install it from source by using the following commands:

- RHEL/CentOS:

```
sudo yum install numactl-libs numactl-devel
```

```
git clone https://github.com/memkind/memkind.git
```

```
cd memkind
```

```
./build.sh --prefix=/usr
```

```
sudo yum remove memkind
```

```
sudo make install
```

```
sudo ldconfig
```

- Ubuntu or Debian:

```
sudo apt-get install libnuma1 libnuma-dev
```

```
git clone https://github.com/memkind/memkind.git
```

```
cd memkind
```

```
./build.sh --prefix=/usr
```

```
sudo apt-get remove memkind
```

```
sudo make install
```

```
sudo ldconfig
```

- SLES:

```
sudo zypper install numactl-libs numactl-devel
```

```
git clone https://github.com/memkind/memkind.git
```

```
cd memkind
```

```
./build.sh --prefix=/usr
```

```
sudo zypper remove memkind
```

```
sudo make install
```

```
sudo ldconfig
```

Java client doesn't verify channel bindings during connection negotiation

Affected Versions: CDH 6.3.0, 6.3.1

Fixed Versions: 6.3.2

Apache Issue: [KUDU-3014](#) - Fixed a bug in the connection negotiation code of the Kudu Java client. Now the Kudu Java client verifies the channel binding information while negotiating connections to Kudu servers.

Potential to bypass transaction and idempotent ACL checks in Apache Kafka

It is possible to manually craft a Produce request which bypasses transaction and idempotent ACL validation. Only authenticated clients with Write permission on the respective topics are able to exploit this vulnerability.

Products affected:

- CDH
- CDK Powered by Apache Kafka

Releases affected:

- CDH versions 6.0.x, 6.1.x, 6.2.0
- CDK versions 3.0.x, 3.1.x, 4.0.x

Users affected: All users who run Kafka in CDH and CDK.

Date/time of detection: September, 2018

Severity (Low/Medium/High):7.1 (High) ([CVSS:3.0/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:H/A:H](#))

Impact: Attackers can exploit this issue to bypass certain security restrictions to perform unauthorized actions. This can aid in further attacks.

CVE: CVE-2018-17196

Immediate action required: Update to a version of CDH containing the fix.

Addressed in release/refresh/patch:

- CDH 6.2.1, 6.3.2
- CDK 4.1.0

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-378: Potential to bypass transaction and idempotent ACL checks in Apache Kafka](#)

CDH 6.3.1 Release Notes



Important: CDH 6.3.0 and 6.3.1 release repositories were removed from Cloudera Archive on January 1, 2020. Upgrade to CDH 6.3.2 containing the fix for the issue described in the [TSB 2020-432: Potential HDFS data loss due to snapshot usage](#) Knowledge Base article, or to any later CDH version.

The following topics describe new features, fixed issues, incompatible changes, and known issues for CDH 6.3.1:

New Features in CDH 6.3.1

This is a maintenance release that fixes some important issues. For details, see [Fixed Issues in CDH 6.3.1](#).

Isilon storage is now supported

For more information, see:

- [Product Compatibility for Dell EMC Isilon](#) on page 39
- [Using CDH with Isilon Storage](#)

Cloudera Issue: OPSAPS-46438

Fixed Issues in CDH 6.3.1

CDH 6.3.1 fixes the following issues:

Hue Silently Disables StartTLS in LDAP Connections

There are two mechanisms to secure communication to an LDAP server. One is to use an 'ldaps' connection, where all traffic is encrypted inside a TLS tunnel - much like 'https'. The other is to use 'StartTLS', where traffic begins unencrypted in the "ldap" protocol and then upgrades itself to a TLS connection.

If StartTLS is enabled in the Hue configuration but the 'ldap_cert' parameter is not configured, then Hue silently disables StartTLS.

StartTLS will not be used for synchronization or import, even if StartTLS is enabled and the 'ldap_cert' parameter is set.

The result is that connections that the administrator assumes to be secured, using StartTLS, are not actually secure.

CVE: CVE-2019-19146

Date/time of detection: 22nd March, 2019

Detected by: Ben Gooley, Cloudera

Severity (Low/Medium/High): 8.8 High [CVSS AV:N/AC:L/PR:N/UI:R/S:U/C:H/I:H/A:H](#)

Products affected: CDH

Releases affected:

- CDH 5.x
- CDH 6.1.0
- CDH 6.1.1
- CDH 6.2.0
- CDH 6.2.1
- CDH 6.3.0

Users affected: All users who are using StartTLS enabled in the Hue configuration when using LDAP as Authentication Backend to login in Hue.

Impact: Sensitive data exposure.

Immediate action required:

- **Upgrade (recommended):** Update to a version of CDH containing the fix.
- **Workaround:** Use "ldaps" instead of "ldap" and StartTLS.

Addressed in release/refresh/patch: CDH 6.3.1 and above

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-371: Hue Silently Disables StartTLS in LDAP Connections](#)

The Idempotent and Transactional Capabilities of Kafka are Incompatible with Sentry

The idempotent and transactional capabilities of Kafka are not compatible with Sentry. The issue is due to Sentry being unable to handle authorization policies for Kafka transactions. As a result, users cannot use Kafka transaction in combination with Sentry.

Workaround: Use the Sentry super user in applications where idempotent producing is a requirement or disable Sentry.

Affected Versions: CDK 4.0 and later, CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.3.0

Fixed Versions: CDH 6.2.1, 6.3.1

Apache Issue: N/A

Cloudera Issue: CDH-80606

Upstream Issues Fixed

The following upstream issues are fixed in CDH 6.3.1:

Apache Accumulo

There are no notable fixed issues in this release.

Apache Avro

The following issue is fixed in CDH 6.3.1:

- [HIVE-17829](#) - Fixed ArrayIndexOutOfBoundsException that occurred when using HBASE-backed tables with Avro schema in Hive2

Apache Crunch

There are no notable fixed issues in this release.

Apache Flume

There are no notable fixed issues in this release.

Apache Hadoop

The following issue is fixed in CDH 6.3.1:

- [HADOOP-16018](#) - DistCp does not reassemble chunks when the value of blocks per chunk is greater than zero.

HDFS

The following issues are fixed in CDH 6.3.1:

- [HDFS-12828](#) - OIV ReverseXML Processor fails with escaped characters.
- [HDFS-13101](#) - An fsimage corruption related to snapshots.
- [HDFS-13709](#) - Report bad block to NameNode when transfer block encounters EIO exception
- [HDFS-14148](#) - HDFS OIV ReverseXML SnapshotSection parser throws exception when there is more than one snapshottable directory.
- [HDFS-14687](#) - Standby Namenode does not come out of safemode when EC files are being written.
- [HDFS-14706](#) - Checksums are not checked if the block meta file size is less than 7 bytes.

MapReduce 2

The following issue is fixed in CDH 6.3.1:

- [MAPREDUCE-7225](#) - Fix broken current folder expansion during MR job start

YARN

The following issues are fixed in CDH 6.3.1:

- [YARN-9667](#) - Container-executor.c duplicates messages to stdout
- [YARN-9833](#) - Race condition when DirectoryCollection.checkDirs() runs during container launch

Apache HBase

The following issues are fixed in CDH 6.3.1:

- [HBASE-19893](#) - restore_snapshot is broken in master branch when region splits
- [HBASE-20305](#) - adding options to skip deletes/puts on target when running SyncTable
- [HBASE-22169](#) - Open region failed cause memory leak
- [HBASE-22539](#) - WAL corruption due to early DBBs re-use when Durability.ASYNC_WAL is used
- [HBASE-22617](#) - Recovered WAL directories not getting cleaned up
- [HBASE-22690](#) - Deprecate / Remove OfflineMetaRepair in hbase-2+
- [HBASE-22759](#) - Extended grant and revoke audit events with caller info

Apache Hive

The following issues are fixed in CDH 6.3.1:

- [HIVE-17829](#) - Fixed ArrayIndexOutOfBoundsException that occurred when using HBASE-backed tables with Avro schema in Hive2

Hue

The following issues are fixed in CDH 6.3.1:

- [HUE-8922](#) - [frontend] Show dates and times in local format with timezone offset details
- [HUE-8933](#) - [editor] Results are not properly cleared in multi-statement execution
- [HUE-8950](#) - [core] Saving newly copied Oozie workflow throws an exception
- [HUE-8979](#) - [jib] Oozie spark jobs display a NoneType object that is not iterable

Apache Impala

The following issues are fixed in CDH 6.3.1:

- [IMPALA-8549](#) - Added support for scanning DEFLATE text files.
- [IMPALA-8820](#) - Fixed an issue where the catalogd process was not found when Impala starts in a cluster.
- [IMPALA-8847](#) - The event based automatic metadata invalidation can now correctly ignore empty partition lists generated for certain Hive queries.

Apache Kafka

There are no notable fixed issues in this release.

Apache Kite

There are no notable fixed issues in this release.

Apache Kudu

There are no notable fixed issues in this release.

Apache Oozie

The following issues are fixed in CDH 6.3.1:

- [OOZIE-3397](#) - Improve logging in NotificationXCommand.
- [OOZIE-3542](#) - Handle better HDFS implementations in ECPolicyDisabler.

Apache Parquet

There are no notable fixed issues in this release.

Apache Pig

There are no notable fixed issues in this release.

Cloudera Search

There are no notable fixed issues in this release.

Apache Sentry

The following issues are fixed in CDH 6.3.1:

- [SENTRY-2276](#) - Sentry-Kafka integration does not support Kafka's Alter/DescribeConfigs and IdempotentWrite operations
- [SENTRY-2528](#) - Format exception when fetching a full snapshot

Apache Spark

The following issues are fixed in CDH 6.3.1:

- [SPARK-18364](#) - [YARN] Expose metrics for YarnShuffleService
- [SPARK-24352](#) - [CORE][TESTS] De-flake StandaloneDynamicAllocationSuite blacklist test
- [SPARK-24355](#) - Spark external shuffle server improvement to better handle block fetch requests.
- [SPARK-25139](#) - [SPARK-18406][CORE][2.4] Avoid NonFataIs to kill the Executor in PythonRunner
- [SPARK-25641](#) - Change the spark.shuffle.server.chunkFetchHandlerThreadsPercent default to 100
- [SPARK-25642](#) - [YARN] Adding two new metrics to record the number of registered connections as well as the number of active connections to YARN Shuffle Service

- [SPARK-25692](#) - [CORE] Remove static initialization of worker eventLoop handling chunk fetch requests within TransportContext. This fixes ChunkFetchIntegrationSuite as well
- [SPARK-26615](#) - [CORE] Fixing transport server/client resource leaks in the core unittests
- [SPARK-27021](#) - [CORE] Cleanup of Netty event loop group for shuffle chunk fetch requests
- [SPARK-28150](#) - [CORE][FOLLOW-UP] Don't try to log in when impersonating.
- [SPARK-28150](#) - [CORE] Log in user before getting delegation tokens.
- [SPARK-28261](#) - [CORE] Fix client reuse test
- [SPARK-28335](#) - [DSTREAMS][TEST] DirectKafkaStreamSuite wait for Kafka async commit
- [SPARK-28584](#) - [CORE] Fix thread safety issue in blacklist timer, tests

Apache Sqoop

The following issue is fixed in CDH 6.3.1:

- [SQOOP-3441](#) - Prepare Sqoop for Java 11 support

Apache ZooKeeper

There are no notable fixed issues in this release.

Unsupported Features in CDH 6.3.1

This page lists the unsupported features in CDH 6.3.x. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.3.1](#) on page 578.

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 540
- [YARN Unsupported Features](#) on page 540

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.3.x:

- ACLs for the NFS gateway ([HADOOP-11004](#))
- Aliyun Cloud Connector ([HADOOP-12756](#))
- Allow HDFS block replicas to be provided by an external storage system ([HDFS-9806](#))
- Consistent standby Serving reads ([HDFS-12943](#))
- HDFS Router Based Federation ([HDFS-10467](#))
- More than two NameNodes ([HDFS-6440](#))
- NameNode Federation ([HDFS-1052](#))
- Openstack Swift ([HADOOP-8545](#))
- SFTP FileSystem ([HADOOP-5732](#))
- Storage policy satisfier ([HDFS-10285](#))
- Upgrade Domain ([HDFS-7541](#))

YARN Unsupported Features

The following YARN features are not supported in CDH 6.3.x:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers
- Distributed Scheduling
- Docker on YARN (DockerContainerExecutor)
- Native Services
- New Aggregated Log File Format
- Node Labels

- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Estimator Service
- Resource Profiles
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.3.x:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction
- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation
- Client tarball
- Rolling upgrade from CDH 5 HBase versions

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.3.x:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution
- Hive Metastore - Derby
- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))
- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka features are not supported in CDH 6.3.x:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.

- Kafka Connect is included in CDH 6.3.x, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.3.x, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.3.x:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.3.x:

- Pig on Tez is not supported in CDH 6.1.x ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.3.x:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.3.x:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

([Known Issue](#))

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.x, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.3.x:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)

- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is supported, but the following features of it *are not*:
 - Continuous processing, which is still experimental, is not supported
 - Stream static joins with HBase have not been tested and therefore are not supported
- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.3.x:

- `import-mainframe`

Cloudera Connector for Netezza

Cloudera Connector for Netezza is not supported in CDH 6.3.x

Incompatible Changes in CDH 6.3.1



Important:

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.3.1 grouped by component:

Apache Accumulo

CDH 6.3.1 introduces no new incompatible changes for Apache Accumulo.

Apache Avro

API Changes

One method was removed in CDH 6.0.0:

```
GenericData.toString (Object datum, StringBuilder buffer)
```

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires `GenericEnumSymbol` - likely to break current Generic API users that often have `String` or `Java Enum` for these fields
- [AVRO-1502](#): Avro Objects now `Serializable` - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be `HTrace`
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.

- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).
- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. The only additional configuration required to use HBase2Sink is to replace the component name in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

com.google.common.collect.ImmutableMap

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

- [HDFS Incompatible Changes](#) on page 544
- [MapReduce](#) on page 546
- [YARN](#) on page 546

HDFS Incompatible Changes

CDH 6.0.0, introduced the following incompatible changes for HDFS:

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.
- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSCliant#mkdirs` and `DFSCliant#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.
- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.
 - All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.
- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0
- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.
- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0

- asm from 3.2 to 5.0.4

MapReduce

CDH 6.0.0, introduced the following incompatible changes:

- Support for MapReduce v1 has been dropped from CDH 6.0.0.
- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

CDH 6.3.1 introduces no new incompatible changes for Apache YARN.

Apache HBase

CDH 6.2.x contains the following downstream HBase incompatible change:

`hbase.security.authorization`

The default value for `hbase.security.authorization` has been changed from `true` to `false`. Secured clusters should make sure to explicitly set it to `true` in XML configuration file before upgrading to one of these versions ([HBASE-19483](#)). True as the default value of `hbase.security.authorization` was changed because not all clusters need authorization. (History: [HBASE-13275](#)) Rather, only the clusters which need authorization should set this configuration as `true`.

Incompatible Changes

For more information about upstream incompatible changes, see the Apache Reference Guide [Incompatible Changes](#) and [Upgrade Paths](#).

CDH 6.1.0 introduces the following incompatible changes for HBase:

- [HBASE-20270](#): Error triggered command help is no longer available.
- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.

CDH 6.0.x introduces the following upstream HBase incompatible changes:

- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.
- Public interface API changes:
 - [HBASE-15607](#): Admin
 - [HBASE-19112](#), [HBASE-18945](#): Cell
 - Region, Store, HBaseTestingUtility
- [HBASE-18792](#): hbase-2 needs to defend against hbck operations
- [HBASE-15982](#): Interface ReplicationEndpoint extends Guava's Service.
- [HBASE-18995](#): Split CellUtil into public CellUtil and PrivateCellUtil for Internal use only.
- [HBASE-19179](#): Purged the hbase-prefix-tree module and all references from the code base.
- [HBASE-17595](#): Add partial result support for small/limited scan; Now small scan and limited scan could also return partial results.
- [HBASE-16765](#): New default split policy, SteppingSplitPolicy.
- [HBASE-17442](#): Move most of the replication related classes from hbase-client to hbase-replication package.
- [HBASE-16196](#): The bundled JRuby 1.6.8 has been updated to version 9.1.9.0.
- [HBASE-18811](#): Filters have been moved from Public to LimitedPrivate.
- [HBASE-18697](#): Replaced hbase-shaded-server jar with hbase-shaded-mapreduce jar.
- [HBASE-18640](#): Moved mapreduce related classes out of hbase-server into separate hbase-mapreduce jar .
- [HBASE-19128](#): Distributed Log Replay feature has been removed.
- [HBASE-19176](#): Hbase-native-client has been removed.
- [HBASE-17472](#): Changed semantics of granting new permissions. Earlier, new grants would override previous permissions, but now, the new and existing permissions get merged.
- [HBASE-18374](#): Previous "mutate" latency metrics has been renamed to "put" metrics.

- [HBASE-15740](#): Removed Replication metric `source.shippedKBs` in favor of `source.shippedBytes`.
- [HBASE-13849](#): Removed restore and clone snapshot from the WebUI.
- [HBASE-13252](#): The concept of managed connections in HBase (deprecated before) has now been extinguished completely, and now all callers are responsible for managing the lifecycle of connections they acquire.
- [HBASE-14045](#): Bumped thrift version to 0.9.2.
- [HBASE-5401](#): Changes to number of tasks PE runs when clients are `mapreduce`. Now `tasks == client count`. Previous we hardcoded ten tasks per client instance.

Changed Behavior

CDH 6.1.x contains the following HBase behavior changes:

- [HBASE-14350](#): Assignment Manager v2 - Split/Merge have moved to the Master; it runs them now. Hooks around Split/Merge are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-18271](#): Moved to internal shaded netty.
- [HBASE-17343](#): Default MemStore to be CompactingMemStore instead of DefaultMemStore. In-memory compaction of CompactingMemStore demonstrated sizable improvement in HBase's write amplification and read/write performance.
- [HBASE-19092](#): Make Tag `IA.LimitedPrivate` and expose for CPs.
- [HBASE-18137](#): Replication gets stuck for empty WALs.
- [HBASE-17513](#): Thrift Server 1 uses different QOP settings than RPC and Thrift Server 2 and can easily be misconfigured so there is no encryption when the operator expects it.
- [HBASE-16868](#): Add a `replicate_all` flag to replication peer config. The default value is true, which means all user tables (`REPLICATION_SCOPE != 0`) will be replicated to peer cluster.
- [HBASE-19341](#): Ensure Coprocessors can abort a server.
- [HBASE-18469](#): Correct RegionServer metric of `totalRequestCount`.
- [HBASE-17125](#): Marked Scan and Get's `setMaxVersions()` and `setMaxVersions(int)` as deprecated. They are easy to misunderstand with column family's max versions, so use `readAllVersions()` and `readVersions(int)` instead.
- [HBASE-16567](#): Core is now up on protobuf 3.1.0 (Coprocessor Endpoints and REST are still on protobuf 2.5.0).
- [HBASE-14004](#): Fix inconsistency between Memstore and WAL which may result in data in remote cluster that is not in the origin (Replication).
- [HBASE-18786](#): `FileNotFoundException` opening a StoreFile in a primary replica now causes a RegionServer to crash out where before it would be ignored (or optionally handled via `close/reopen`).
- [HBASE-17956](#): Raw scans will also read TTL expired cells.
- [HBASE-17017](#): Removed per-region latency histogram metrics.
- [HBASE-19483](#): Added ACL checks to RSGroup commands - On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands.
- [HBASE-19358](#): Added ACL checks to RSGroup commands ([HBASE-19483](#)): On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands. Improved stability of splitting log when do failover.
- [HBASE-18883](#): Updated our Curator version to 4.0 - Users who experience classpath issues due to version conflicts are recommended to use either the `hbase-shaded-client` or `hbase-shaded-mapreduce` artifacts.
- [HBASE-16388](#): Prevent client threads being blocked by only one slow region server - Added a new configuration to limit the max number of concurrent request to one region server.
- [HBASE-15212](#): New configuration to limit RPC request size to protect the server against very large incoming RPC requests. All requests larger than this size will be immediately rejected before allocating any resources.
- [HBASE-15968](#): This issue resolved two long-term issues in HBase: 1) Puts may be masked by a delete before them, and 2) Major compactions change query results. Offers a new behavior to fix this issue with a little performance reduction. Disabled by default. See the issue for details and caveats.
- [HBASE-13701](#): `SecureBulkLoadEndpoint` has been integrated into HBase core as default bulk load mechanism. It is no longer needed to install it as a coprocessor endpoint.
- [HBASE-9774](#): HBase native metrics and metric collection for coprocessors.
- [HBASE-18294](#): Reduce global heap pressure: flush based on heap occupancy.

Apache Hive/Hive on Spark/HCatalog

Apache Hive

The following changes are introduced to Hive in CDH 6.0.0, and are not backwards compatible:

- [UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting](#) on page 1248
- [Support for UNION DISTINCT](#) on page 1249
- [OFFLINE and NO_DROP Options Removed from Table and Partition DDL](#) on page 1250
- [DESCRIBE Query Syntax Change](#) on page 1250
- [CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names](#) on page 1250
- [Reserved and Non-Reserved Keyword Changes in HiveQL](#) on page 1250
- [Apache Hive API Changes in CDH 6.0.0](#) on page 1252
- [Apache Hive Configuration Changes in CDH 6.0.0](#) on page 1253
- [HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes](#) on page 1256
- [Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column](#) on page 1256
- [Hive Logging Framework Switched to SLF4J/Log4j 2](#) on page 1256
- [Deprecated Parquet Java Classes Removed from Hive](#) on page 1256
- [Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms](#) on page 1257
- [S3N Connector Is Removed from CDH 6.0](#) on page 1257
- [Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request](#) on page 1257
- [Support Added for Escaping Carriage Returns and New Line Characters for Text Files \(LazySimpleSerDe\)](#) on page 1258
- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1258

Changing Table File Format from ORC with the ALTER TABLE Command Not Supported in CDH 6

Changing the table file format from ORC to another file format with the ALTER TABLE command is not supported in CDH 6 (it returns an error).

UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting

Prior to this change, Hive performed implicit casts when data types from different type groups were specified in queries that use UNION ALL. For example, before CDH 6.0, if you had the two following tables:

Table "one"

```

+-----+-----+-----+
| one.col_1 | one.col_2 | one.col_3 |
+-----+-----+-----+
| 21        | hello_all | b         |
+-----+-----+-----+

```

Where col_1 datatype is int, col_2 datatype is string, and col_3 datatype is char(1).

Table "two"

```

+-----+-----+-----+
| two.col_4 | two.col_5 | two.col_6 |
+-----+-----+-----+
| 75.0      | abcde    | 45        |
+-----+-----+-----+

```

Where col_4 datatype is double, col_5 datatype is varchar(5), and col_6 datatype is int.

And you ran the following `UNION ALL` query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS
col_3 FROM two;
```

You received the following result set:

```
+-----+-----+-----+
| _u1.col_1 | _u1.col_2 | _u1.col_3 |
+-----+-----+-----+
| 75.0      | abcde     | 4         |
| 21.0      | hello     | b         |
+-----+-----+-----+
```

Note that this statement implicitly casts the values from table `one` with the following errors resulting in data loss:

- `one.col_1` is cast to a double datatype
- `one.col_2` is cast to a `varchar(5)` datatype, which truncates the original value from `hello_all` to `hello`
- `one.col_3` is cast to a `char(1)` datatype, which truncates the original value from `45` to `4`

In CDH 6.0, no implicit cast is performed across different type groups. For example, `STRING`, `CHAR`, and `VARCHAR` are in one type group, and `INT`, `BIGINT`, and `DECIMAL` are in another type group, and so on. So, in CDH 6.0 and later, the above query that uses `UNION ALL`, returns an exception for the columns that contain datatypes that are not part of a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
 - The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.
- **Behavior in CDH 6:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
 - The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:
 - `ENABLE | DISABLE NO_DROP [CASCADE]`
 - `ENABLE | DISABLE OFFLINE`

– ALTER TABLE ... IGNORE PROTECTION

- The following support has also been removed from the `HiveMetastoreClient` class:

The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, ``data``). *Non-reserved keywords* can be used as table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|--------|------------|-----|--------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
|--------|------------|-----|--------|

| | | | |
|---------|----------|------------|----------|
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |
| START | | | |

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|----------|-----------|-----------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |
| BOOLEAN | BOTH | BY | CREATE |
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|--------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLTIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|------------|--------|-----------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |

| | | | |
|----------|---------------|---------|-------------|
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |
| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252
- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a `CLOB` data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like "=", "<>", and "!=" might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with `CLOB` data types. There is no equivalent "<>" operator that is compatible with `CLOB`. So there is no equivalent operator for the above example that uses the "<>" inequality operator. The equivalent for "=" is the `LIKE` operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253
- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(hive.server2.enable.impersonation\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters |

| Value Name | Description |
|------------|--|
| | with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.
3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned table but do not filter on the partition column. | <code>false</code> |
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)

- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (`hive.server2.enable.impersonation`) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`

- **Description:** Sets the file format in which a query's intermediate results are stored.

3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:

```
org.apache.hive.service.cli.thrift
```

To the following *new* namespace:

```
org.apache.hive.service.rpc.thrift
```

- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale of 5, the value returned for zero was returned as 0. *Now*, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the `INPUTFORMAT` to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat` and set the `OUTPUTFORMAT` to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`
- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanup(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|--|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |
| REF_GENERATION | Specifies how values in the <code>SELF_REFERENCING_COL_NAME</code> column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the `SerDe` property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, `'r'` or `'n'` cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the [LazySerDeParameters class](#). For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to false, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

CDH 6.3.1 introduces no new incompatible changes for Hue.

Apache Impala

Port Change for SHUTDOWN Command

The `SHUTDOWN` command for shutting down a remote server used the backend port in CDH 6.1. Starting in CDH 6.2, the command uses the KRPC port, e.g. `:shutdown('host100:27000')`.

Apache Kafka

Incompatible Changes Introduced in CDH 6.3.1

CDH 6.3.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.3.0

Default Consumer Group ID Change

The default consumer group ID has been changed from the empty string (`"`) to `null`. Consumers that use the new default group ID will not be able to subscribe to topics, and fetch or commit offsets. The empty string as consumer group ID is deprecated but will be supported until a future major release. Old clients that rely on the empty string group id will now have to explicitly provide it as part of their consumer configuration. For more information, see [KIP-289](#).

Incompatible Changes Introduced in CDH 6.2.1

CDH 6.2.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.2.0



Warning: Kafka in CDH 6.2.0 is based on Apache Kafka 2.1.0, which contains a change to the internal schema used to store consumer offsets. As a result of this change, downgrading Kafka to a version lower than CDH 6.2.0 is **NOT** possible once Kafka has been upgraded to CDH 6.2.0 or higher.

Default Behaviour Changes

Kafka CDH 6.2.0. Introduces the following default behaviour changes:

- Unclean leader election is automatically enabled by the controller when `unclean.leader.election.enable` config is dynamically updated by using per-topic config override.
- Diagnostic data bundles collected by Cloudera Manager from now on include information on Kafka topics. The bundle includes the information exposed by the following two commands:

```
- kafka-topics --describe
- kafka-topics --list
```

Incompatible Changes Introduced in CDH 6.1.1

CDH 6.1.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.1.0

Scala-based Client API Removed

Scala-based clients were deprecated in a previous release and are removed as of CDH 6.1.0.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are effected:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Default Behaviour Change

[KAFKA-7050](#): The default value for `request.timeout.ms` is decreased to 30 seconds. In addition, a new logic is added that makes the `JoinGroup` requests ignore this timeout.

Incompatible Changes Introduced in CDH 6.0.1

CDH 6.0.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.0.0

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see the previous entry). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`
- `kafka.tools.ExportZkOffset`

- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- `GroupCoordinatorNotAvailableException`
- `GroupLoadInProgressException`
- `NotCoordinatorForGroupException`
- `kafka.common.KafkaStorageException`

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Apache Kudu

There are no incompatible changes in this release.

Apache Oozie

There are no incompatible changes in this release.

Apache Parquet

Packages and Group ID Renamed

As a part of the Apache incubation process, all Parquet packages and the project's group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|-----------------------------------|
| Java Package Names | <code>parquet.*</code> | <code>org.apache.parquet.*</code> |
| Group ID | <code>com.twitter</code> | <code>org.apache.parquet</code> |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update *.java files:

| Before | After |
|--------------------------------|---|
| <code>import parquet.*;</code> | <code>import org.apache.parquet.*;</code> |

Update pom.xml:

| Before | After |
|--|---|
| <pre><dependency> <groupId> com.twitter </groupId></pre> | <pre><dependency> <groupId> org.apache.parquet </groupId></pre> |

| Before | After |
|---|---|
| <pre><version> \${parquet.version} </version> </dependency></pre> | <pre><version> \${parquet.version} </version> </dependency></pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestedSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestedSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Pig

The following change is introduced to Pig in CDH 6.0 and is not a backwards compatible change. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0 JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 40: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|---|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |
| VAR (stats) | Generates the variance of a set of values. | variance | None |
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 562. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 562. |
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way to filter using a logical disjunction over many values. | IN | None |

For more information about using Hive UDFs, see https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 41: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|-----------------------------|----------|------------|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |

| | | |
|------------------|---|---|
| Examples: | <pre> register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); } </pre> | <pre> define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc)); </pre> |
|------------------|---|---|

Although DataFu `StreamingQuantile` and `StreamingMedian` might appear to match Hive's `percentile_approx` function, Pig cannot consume `percentile_approx`.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 42: DataFu Functions with No Hive UDF Equivalent

| | | |
|----------------------------|-----------------------------|--------------------------------|
| AppendToBag (bags) | AssertUDF (util) | BagConcat (bags) |
| BagGroup (bags) | BagLeftOuterJoin (bags) | BagSplit (bags) |
| BoolToInt (util) | CountEach (bags) | DistinctBy (bags) |
| EmptyBagToNull (bags) | EmptyBagToNullFields (bags) | Enumerate (bags) |
| FirstTupleFromBag (bags) | HaversineDistInMiles (geo) | IntToBool (util) |
| MarkovPairs | NullToEmptyBag (bags) | PageRank (linkanalysis) |
| PrependToBag (bags) | ReservoirSample (sampling)* | ReverseEnumerate (bags) |
| SampleByKey (sampling)* | SessionCount (sessions) | Sessionize (sessions) |
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with `TABLESAMPLE` in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

The following changes are introduced in CDH 6.1

In CDH 6.1 Cloudera Search was rebased on Apache Solr 7.4.

Deprecations

- Enabling/disabling `autoAddReplicas` cluster-wide with the API is deprecated. Use `suspend/resume` trigger APIs with `name=".auto_add_replicas"` instead.
- In the `ReplicationHandler`, the `master.commitReserveDuration` sub-element is deprecated. Configure a direct `commitReserveDuration` element instead for use in all modes (leader, follower, cloud).

Removals

- The old Leader-In-Recovery implementation (implemented in Solr 4.9) has been removed and replaced. Solr supports rolling upgrades from old 7.x versions of Solr to future 7.x releases until the last release of the 7.x major version. This means that to upgrade to Solr 8, you will have to be on Solr 7.3 or higher.
- The throttling mechanism used to limit the rate of processed autoscaling events has been removed. This deprecates the `actionThrottlePeriodSeconds` setting in the `set-properties` command of Autoscaling API. Use the `triggerCooldownPeriodSeconds` parameter to pause event processing.
- The `RunExecutableListener` event listener was removed for security reasons. If you want to listen to events caused by updates and commits, or you want to optimize, write your own listener as native Java class as part of a Solr plugin.

For more information see the [Apache Solr 7.4 Release Notes](#).

The following changes are introduced in CDH 6.0

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.
- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

Apache Sentry contains the following incompatible change in CDH 6.0.0:

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.
- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.

- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.
Since compile-time type-safety in Python and R is not a language feature, the concept of `Dataset` does not apply to these languages' APIs. Instead, `DataFrame` remains the primary programming abstraction.
- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

The following changes were introduced in CDH 6.0, and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0. Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a `CHAR` or `VARCHAR` column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to `true` to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPSWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with `hcatalog` jobs or when `hive import` with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile
format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with --hcatalog-table <HIVE_VIEW>

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the --hcatalog-table option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table"
--hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using EscapeUtils. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySql after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of --input-null-string and --input-null-non-string options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using --direct connector and a MySQL database

The MySQL direct connector does not support the --null-string, --null-non-string, --input-null-string, and --input-null-non-string options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

There are no incompatible changes in this release.

Timezone Names Unsupported in Impala in CDH 6.3.1

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|------------|------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |

| | |
|--|--------------------------------|
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |

| | |
|--|----------------------|
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |

| | |
|------------------------------|---------------------------|
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |

| | |
|--|------------------------------|
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |
| FJST | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |

| | |
|--------------------|-------------------|
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |

| | |
|-------------------------------|--------------------|
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |

| | |
|--------------------------------|----------------------|
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |

| | |
|----------------------------|----------------------|
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |

| | |
|---------------------------------|------------------------|
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymsk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |
| Srednekolymsk Time | Asia/Srednekolymsk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |

| | |
|---------------------|---------------------|
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |

| | |
|-------------------------------|--------------------|
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |

| | |
|--------------------|--------------------|
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.3.1

The following sections describe the known issues in CDH 6.3.1, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-1000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.

 **Important:** If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can workaround the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|----------------------------------|---|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.

5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
10. Click **Save Changes**.
11. Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.
10. Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|-----------------------|---|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | <code>JAVA_TOOL_OPTIONS=-Xss1280K</code> |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | <code>JAVA_TOOL_OPTIONS=-Xss1280K</code> |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

(1) Ensure that the kernel is up to date.

- **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
- **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
- **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

There are no known issues in this release of Apache Accumulo.

Apache Crunch Known Issues



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

Apache Flume Known Issues

The following section describes known issues and workarounds in Flume, as of the current production release.

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to false.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x
- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

HDFS**Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction**

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH

- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.
- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="  
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,  
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

Potential HDFS data loss due to snapshot usage

A fix to HDFS snapshot functionality through HDFS-13101 caused a regression in the affected product releases. Because of incorrect reference counting calculation in the NameNode, a snapshot delete operation can result in critical data loss in the Filesystem.

Releases affected:

- CDH 6.2.1, 6.3.1 and 6.3.2
- CDP Data Center 7.0.x, CDP Data Center 7.1.1, CDP Data Center 7.1.2
- HDP or CDH customers with the patch installed for HDFS-13101 and/or HDFS-15012

Users affected:

- Any clusters with HDFS Snapshots enabled.
- Any clusters with BDR based replication on HDFS directories.

Impact: Because of incorrect reference counting calculation in the NameNode, a snapshot delete operation can result in critical data loss in the Filesystem.

Immediate action required:

- Please raise a support case referencing TSB 2020-432 to request a new patch for your impacted product version.
- If you need help in determining the installed product version or patch level, please raise a support case.
- **Workaround:**
 - Avoid using snapshots or BDR functionality.
 - Cloudera BDR uses snapshots feature inherently. Therefore, if either BDR or HDFS snapshot feature is being used, please request for a patch as stated above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-432: Potential HDFS data loss due to snapshot usage](#)

HDFS Snapshot corruption

A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Products affected: HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0 - 6.2.1, 6.3.0, 6.3.1, 6.3.2

Users affected: Any clusters with HDFS Snapshots enabled

Impact: A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Standby NameNode detects the inconsistent snapshot data structure and shuts itself down. To recover from this situation, the fsimage must be repaired and put back into both NameNodes' fsimage directory for the Standby NameNode to start normally. The Active NameNode stays up. However no fsimage checkpoint is performed because the Standby NameNode is down.

This problem can also prevent snapshots from being deleted or files within snapshots being listed. The following is an example of a typical error:

```
hdfs dfs -deleteSnapshot /path snapshot_123
deleteSnapshot: java.lang.IllegalStateException
```

The recovery of the corrupt fsimage can result in the loss of snapshots.

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: Alternatively, avoid using snapshots. Cloudera BDR uses snapshots automatically when the relevant directories are snapshottable. Hence, we strongly recommend avoiding the upgrade to the affected releases if you are using BDR. For information and instructions, see [Enabling and Disabling HDFS Snapshots](#).

Addressed in release/refresh/patch: CDH 6.3.3

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-390: HDFS Snapshot corruption](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:
 - Install CDH using Cloudera Manager; *or*
 - Start the NFS gateway as root; *or*
 - [Start the NFS gateway without using packages](#); *or*
 - You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the portmap.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to 777 on .snapshot directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

Permissions for `dfs.namenode.name.dir` incorrectly set

Hadoop daemons should set permissions for the `dfs.namenode.name.dir` (or `dfs.name.dir`) directories to `drwx-----` (700), but in fact these permissions are set to the file-system default, usually `drwxr-xr-x` (755).

Workaround: Use `chmod` to set permissions to 700.

Affected Versions: All CDH versions

Apache Issue: [HDFS-2470](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
java.lang.NullPointerException at
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler
- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

Using OpenJDK 11 on CDH6.3 and above requires re-installation of YARN MapReduce Framework JARs

Because several Java internal APIs are removed in JDK11, using older versions of MR Framework JARs will fail MR/Hive jobs, with the following error:

```
***
2019-07-18 14:54:52,483 ERROR [main] org.apache.hadoop.mapreduce.v2.app.MRAppMaster:
Error starting MRAppMaster
```

```

java.lang.NoSuchMethodError: sun.nio.ch.DirectBuffer.cleaner()Lsun/misc/Cleaner;
    at org.apache.hadoop.crypto.CryptoStreamUtils.freeDB(CryptoStreamUtils.java:41)
    at org.apache.hadoop.crypto.CryptoInputStream.freeBuffers(CryptoInputStream.java:687)

    at org.apache.hadoop.crypto.CryptoInputStream.close(CryptoInputStream.java:320)
    at java.base/java.io.FilterInputStream.close(FilterInputStream.java:180)
...

```

Workaround:

1. Go to the YARN service.
2. Select Actions > Install YARN MapReduce Framework JARs and click Install YARN MapReduce Framework JARs
3. To verify, you will find the new MR Framework JARs under the MR Application Framework Path (default: /user/yarn/mapreduce/mr-framework/) For example:

```

..
hdfs dfs -ls /user/yarn/mapreduce/mr-framework/
Found 5 items
-rw-r--r-- 332 yarn hadoop 215234466 2018-07-19 11:40
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.0-mr-framework.tar.gz
-rw-r--r-- 97 yarn hadoop 263033197 2018-05-18 18:38
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.x-mr-framework.tar.gz
-rw-r--r-- 331 yarn hadoop 222865312 2018-11-08 14:39
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.1.0-mr-framework.tar.gz
-rw-r--r-- 327 yarn hadoop 232020483 2019-02-25 22:46
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.2.0-mr-framework.tar.gz
-rw-r--r-- 326 yarn hadoop 234641649 2019-07-23 15:49
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.3.0-mr-framework.tar.gz
...

```

Cloudera Bug: CDH-81350**NodeManager fails because of the changed default location of container executor binary**

The default location of container-executor binary and .cfg files was changed to /var/lib/yarn-ce. It used to be /opt/cloudera/parcels/<CDH_parcel_version>. Because of this change, if you did not have the mount options -noexec and -nosuid set on /opt, the NodeManager can fail to start up as these options are set on /var.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the -noexec and -nosuid mount options on /var or change the container-executor binary and .cdf path using the CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR environment variable.

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, Enable Fair Scheduler Continuous Scheduler is turned off by default.

Workaround: Turn off Enable Fair Scheduler Continuous Scheduling in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on Fair Scheduler Assign Multiple Tasks.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated mapred-site.xml that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

GPU or Custom Resource Type User Jobs can Fail After Recovery

When a GPU or other custom resource goes offline when it has containers that use that particular resource and they have not reached completion, after the restart the application will start to recover. However, if the resource is not available anymore the job that uses that resource will fail.

Workaround: N/A

Affected Versions: CDH 6.2.0, CDH 6.3.0

Cloudera Issue: CDH-77649

NodeManager Fails if GPU Use Is Enabled without any Configured GPU

When **Enable GPU Usage** is enabled for a NodeManager and there is no properly configured GPU device in that node, the NodeManager will not start.

Workaround: Disable **Enable GPU Usage** for that NodeManager in Cloudera Manager.

Affected Versions: CDH 6.2.0, CDH 6.3.0

Apache Issue: [YARN-9217](#)

Apache HBase Known Issues

The following section describes known issues and workarounds in HBase, as of the current production release.

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.
2. Find the **Enable Audit Collection** property and clear it.
3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x
- HDP 3.1.5
- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.
 - If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:

- Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
- At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x
- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for `hbase-site.xml` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom `hbase-site` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each `RegionServer` under the `RegionServer/Server JMX metrics` endpoint. When short circuit reads are not enabled, this metric will be zero. When

short circuit reads are enabled and the data locality for this RegionServer is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Default limits for PressureAwareCompactionThroughputController are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP
- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4
- **Workaround:**
 - Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
 - An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

CDH users must not use Apache HBase's OfflineMetaRepair tool

OfflineMetaRepair helps you to rebuild the HBase meta table from the underlying file system. This tool is often used to correct meta table corruption or loss. It is designed to work only with hbase-1.x (CDH 5.x). Users must not run the OfflineMetaRepair tool against CDH 6.x since it uses hbase-2.x. If a user runs OfflineMetaRepair tool in CDH 6.x, then it will break or corrupt the HBase meta table.

If you have already corrupted your meta table or you believe your meta table requires the use of something like the former OfflineMetaRepair tool, do not attempt any further changes, contact Cloudera Support.

Products affected: CDH

Releases affected:

- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0

- CDH 6.3.0

User affected: Clusters with HBase installed.

Impact: Cluster becomes inoperable.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not run OfflineMetaRepair tool.

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-376: CDH users must not use Apache HBase's OfflineMetaRepair tool](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a DataNode can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different DataNodes, meaning that there will be one RegionServer per DataNode per HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

IntegrationTestReplication fails if replication does not finish before the verify phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

ExportSnapshot or DistCp operations may fail on the Amazon s3a:// protocol

`ExportSnapshot` or `DistCP` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO later. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

Export to Azure Blob Storage (the `wasb://` or `wasbs://` protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController postOperation problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive/HCatalog/Hive on Spark/Hive Metastore Known Issues

This topic contains:

- [Hive Known Issues](#)
- [HCatalog Known Issues](#)
- [Hive on Spark Known Issues](#)
- [Hive Metastore Known Issues](#) on page 596

Hive Known Issues

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x

- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Query with an empty WHERE clause problematic if vectorization is off

Specific WHERE clauses cause problems if vectorization is off. For example,

```
SELECT COUNT (DISTINCT cint) FROM alltypesorc WHERE cstring1;
SELECT 1 WHERE 1;
```

If vectorization is turned on and no rules turn off the vectorization, queries run as expected.

Workaround: Rewrite queries with casts or equals.

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-15408](#)

Cloudera Issue: CDH-81649

Query with DISTINCT can fail if vectorization is on

A query can fail when vectorization is turned on, the query contains DISTINCT, and other rules do not turn off the vectorization. A query-specific error message appears, for example:

```
Error: Error while compiling statement: FAILED: SemanticException
org.apache.hadoop.hive.ql.metadata.HiveException: The column KEY._col2:0._col0 is not
in the vectorization context column map {KEY._col0=0, KEY._col1=1, KEY._col2=2}.
(state=42000,code=40000)
```

Workaround: Turn off vectorization for such queries as follows:

```
set hive.vectorized.execution.enabled=false;
```

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-19032](#)

Cloudera Issue: CDH-81341

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: Arithmetic exception [divide by] 0. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the SET statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the SELECT clause on large values in columns with the data type of BIGINT might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are BIGINT data types in the SELECT clause of the query, incorrect results might be returned. Comparison operators include ==, !=, <, <=, >, and >=. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference of values in such columns is out of range for a LONG (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 - (-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a LONG (64-bit) data type can hold.

Workaround: Use a DECIMAL type instead of BIGINT for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the SET statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the ORDER BY clause is not supported for SELECT * queries

When column positions are specified in ORDER BY clauses, they are not honored for SELECT * queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

ALTER PARTITION ... SET LOCATION does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use ALTER PARTITION ... SET LOCATION on S3 or between S3 and HDFS. The rest of the ALTER PARTITION commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Cannot create archive partitions with external HAR (Hadoop Archive) tables

`ALTER TABLE ... ARCHIVE PARTITION` is not supported on external tables.

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types `Server` and `URI` are not supported in "`SHOW GRANT ROLE roleName on OBJECT objectName`" statements

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

Change in Precision of trigonometric functions for Hive Queries with JDK 11

If your Hive queries use trigonometric functions (such as degrees-to-radians, radians-to-degrees, or `sin`) there may be a difference in the output of the 15th decimal place.

Cloudera Bug: CDH-81322

Logging differences create Supportability Issues

In the event you need Apache Hive support from Cloudera, the availability of logs is critical. Some CDH releases do not enable `log4j2` logging for Hive by default. Because of this, logs are not generated. Furthermore, the specified CDH releases are not configured to remove old log files to make room for new ones. This can cause the new logs to be lost. When Hive logs are missing, Support cannot troubleshoot Hive problems efficiently.

Components affected: Hive

Products affected: Hive

Releases affected:

- CDH 6.1
- CDH 6.2
- CDH 6.3

Users affected: Hive users

Severity: Medium

Impact: The absence of Hive log files causes delays in troubleshooting Hive problems.

Action required: Manually configure `log4j2` logging, and delete old log files to make room for new ones.

1. Open Cloudera Manager.
2. Select **Clusters > HIVE**.
3. Click the **Configuration** tab.
4. In the Search field, enter Hive Metastore Server Logging Advanced Configuration Snippet (Safety Valve).
5. Add the following XML to the field (or switch to Editor mode, and enter each property and its value in the fields provided).

```
<property>
  <name>rootLogger.appenderRefs</name>
  <value>root, console, DRFA, PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.name</name>
  <value>org.apache.hadoop.hive.q1.log.PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.level</name>
  <value>DEBUG</value>
</property>
```

```
<property>
  <name>appender.DRFA.filePattern</name>
  <value>${log.dir}/${log.file}.%i</value>
</property>
<property>
  <name>appender.DRFA.strategy.fileIndex</name>
  <value>min</value>
</property>
```

6. In the Search field, enter HiveServer2 Logging Advanced Configuration Snippet (Safety Valve).

7. Add the XML properties from step 5.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-384: Logging differences in CDH 6 create Supportability Issues](#)

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

Hive on Spark (HoS) Known Issues

A query fails with `IllegalArgumentException` Size requested for unknown type: `java.util.Collection`

An example of a query that fails due to this issue is:

```
WITH t2 AS
(SELECT array(1,2) AS c1
UNION ALL SELECT array(2,3) AS c1)
SELECT collect_list(c1)
FROM t2
```

Workaround: Create a table to store the array data.

Affected Versions: 6.3.x, 6.2.x, 6.1.x

Cloudera Issue: CDH-80169

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form "client.RpcRetryingCaller: Call exception...", then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hive Metastore Known Issues

HMS Read Authorization: `get_num_partitions_by_filter` Ignores Authorization

A user can get the number of partitions of a table regardless of the user's permissions

Hue Known Issues

The following sections describe known issue and workaround in Hue, as of the current production release.

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - *The Add Description* field in the Table schema browser does not sanitize user inputs as expected.

- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower
- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower
- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls

Issuing DDL statements using Hue's Impala editor or invoking Hue's "Refresh Cache" function in the left-side metadata browser results in Hue issuing INVALIDATE METADATA calls to the Impala service. This call is expensive and can result in a significant system impact, up to and including full system outage, when repeated in sufficient volume. This has been corrected in HUE-8882.

Components affected:

- Hue
- Impala

Products affected:

- Cloudera Enterprise 5
- Cloudera Enterprise 6

Releases affected:

- CDH 5.15.1, 5.15.2
- CDH 5.16.x

- CDH 6.1.1
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: End-users using Impala editor in Hue.

Severity: High

Impact: Users running DDL statements using the Hue Impala editor or invoking Hue’s Refresh Cache function causes INVALIDATE METADATA commands to be sent to Impala. Impala’s metadata invalidation is an expensive operation and could cause impact on the performance of subsequent queries, hence leading to the potential for significant impact on the entire cluster, including the potential for whole-system outage.

Action required:

- CDH 6.x customers: Upgrade to CDH 6.3.4 that contains the fix.
- CDH 5.x customers: Contact Cloudera Support for further assistance.

Apache issue: [HUE-8882](#)

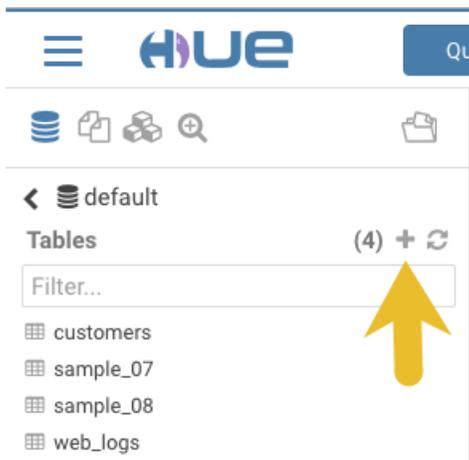
Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls](#)

Table Browser Must Be Refreshed to View Tables Created with the Data Import Wizard

When you create a new table from a file by using the Data Import Wizard, the newly created table columns do not display in the Table Browser until you refresh it.

For example:

1. Create a table from the sample file `web_logs_2.csv` by clicking the plus sign in the left panel, which launches the Data Import Wizard:



2. After you define the table, click **Submit** to generate the new table:

Pick data from file /user/admin/2015_11_19/web_logs_2.csv

Move it to table default.web_logs_2

DESTINATION

Name default.web_logs_2

PROPERTIES

Format Text

Extras

Partitions + Add partition

FIELDS

| | | | | | |
|------|---------|------|--------|---------------------|---------------------|
| Name | field_1 | Type | bigint | 1480895575574446081 | 1480895575574446082 |
| Name | field_2 | Type | string | hbase | static |
| Name | field_3 | Type | bigint | 595 | 831 |
| Name | field_4 | Type | string | Hyderabad | Hyderabad |

Back Submit

Define table characteristics.

Click to generate table.

3. After you generate the new table, you can see it listed on the left assist panel, but when you click the table name to display the columns, an error displays:

default

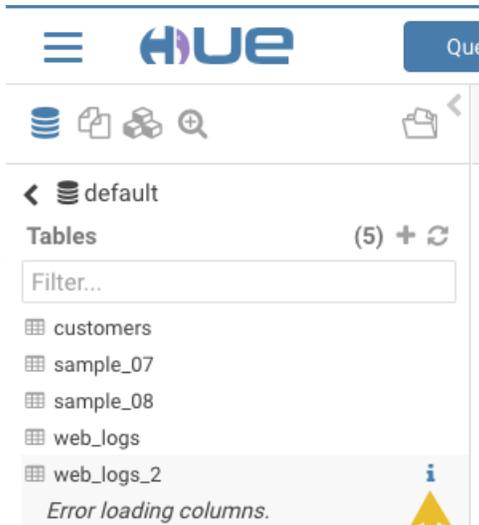
Tables (5) +

Filter...

- customers
- sample_07
- sample_08
- web_logs
- web_logs_2**
Error loading columns.

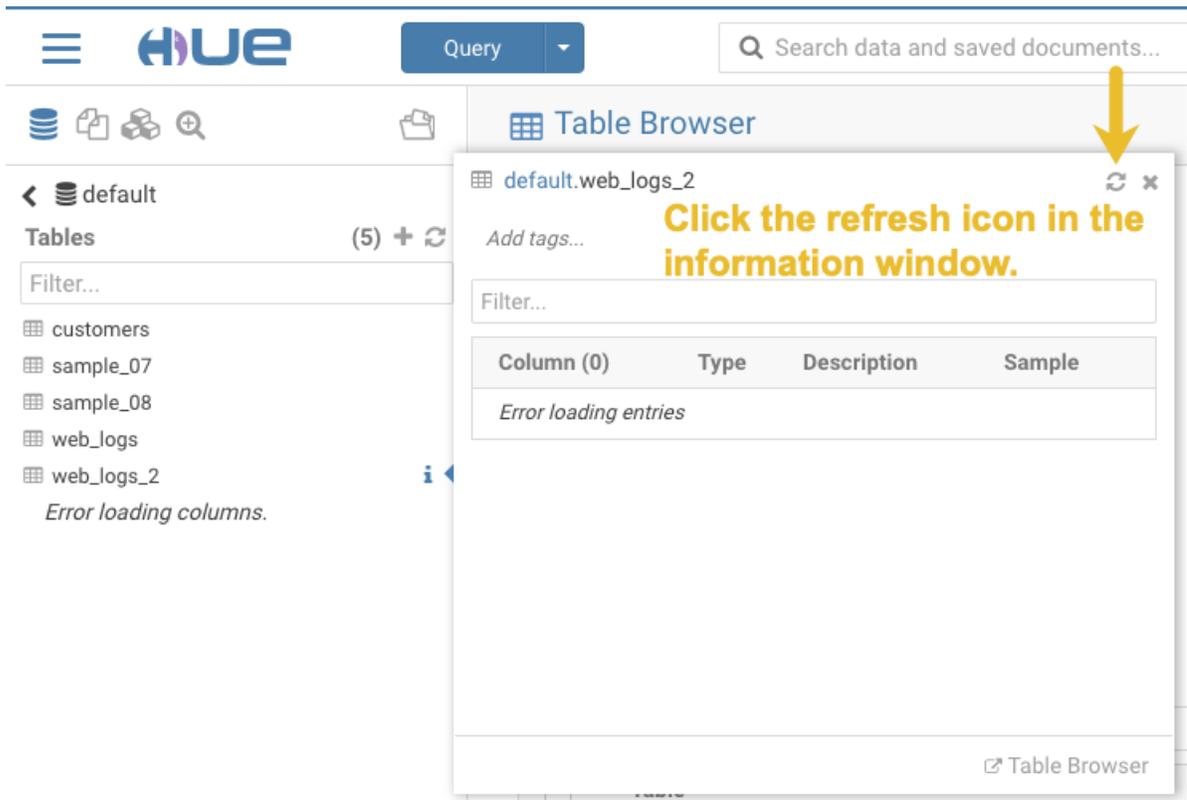
Workaround:

1. Click the information icon that is adjacent to the new table:



Click the information icon.

2. In the information window that opens, click the refresh icon in the upper right corner to view the table columns:



Using the refresh icon in the information window is the least expensive way to refresh the page so performance is not affected.

Affected Version(s): CDH 6.2.0

Cloudera Issue: CDH-77238

Hue does not support the Spark App

Hue does not currently support the Spark application.

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname` only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization

is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \(\string\) [=:].*` And the replacement could be for example: `secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

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Products affected:

- CDP Private Cloud Base
- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: [CVE-2021-28131](#)

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

System-wide auth-to-local mapping not applied correctly to Kudu service account

Due to system `auth_to_local` mapping, the principal may be mapped to some local name.

When running with Kerberos enabled, you may hit the following error message where `<random-string>` is some random string which doesn't match the primary in the Kerberos principal.

```
WARNINGS: TransmitData() to X.X.X.X:27000 failed: Remote error: Not authorized:
{username='<random-string>', principal='impala/redacted'} is not allowed to access
DataStreamService
```

Workaround: Start Impala with the `--use_system_auth_to_local=false` flag to ignore the system-wide `auth_to_local` mappings configured in `/etc/krb5.conf`.

Affected Versions: CDH 5.15, CDH 6.1 and higher

Apache Issue: [KUDU-2198](#)

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate
section memory!
terminate called after throwing an instance of
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>
>'
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max
echo 2000000 > /proc/sys/kernel/pid_max
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)

Breakpad minidumps can be very large when the thread count is high

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump

file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the impalad daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Incorrect result due to constant evaluation in query with outer join

An `OUTER JOIN` query could omit some expected result rows due to a constant such as `FALSE` in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
  INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
  RIGHT JOIN alltypes a3 ON a1.year = a1.bigint_col;
+-----+
| Explain String |
+-----+
| Estimated Per-Host Requirements: Memory=1.00KB VCores=1 |
| 00:EMPTYSET |
+-----+
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a `LIKE` operator is an escaped `\%` character, it does not match a `%` final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: impala::Coordinator::ValidateCollectionSlots

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Configuration needed for Flume to be compatible with Impala

For compatibility with Impala, the value for the Flume HDFS Sink `hdfs.writeFormat` must be set to `Text`, rather than its default value of `Writable`. The `hdfs.writeFormat` setting must be changed to `Text` before creating data files with Flume; otherwise, those files cannot be read by either Impala or Hive.

Resolution: This information has been requested to be added to the upstream Flume documentation.

Affected Versions: All CDH 6 versions

Cloudera Issue: CDH-13199

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null", "string"]` instead of `["string", "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Set limits on size of expression trees

Very deeply nested expressions within queries can exceed internal Impala limits, leading to excessive memory usage.

Workaround: Avoid queries with extremely large expression trees. Setting the query option `disable_codegen=true` may reduce the impact, at a cost of longer query runtime.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4551](#)

Impala does not support running on clusters with federated namespaces

Impala does not support running on clusters with federated namespaces. The `impalad` process will not start on a node running such a filesystem based on the `org.apache.hadoop.fs.viewfs.ViewFs` class.

Workaround: Use standard HDFS on all Impala nodes.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-77](#)

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for `impalad_flags`** to specify the load balancer address with the HiveServer2 port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

Unable to Correctly Parse the Terabyte Unit

Impala does not support parsing strings that contain "TB" when used as a unit for terabytes. The flags related to memory limits may be affected, such as the flags for scratch space and data cache.

Workaround: Use other supported units to specify values, e.g. GB or MB.

Affected Versions: CDH 6.3.x and lower versions

Fixed Versions: CDH 6.4.0

Apache Issue: [IMPALA-8829](#)

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

Casting scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.3.1

Apache Kafka Known Issues

The following sections describe known issues and workarounds in Kafka, as of the current production release.

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to true.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: KAFKA-2561

Cloudera Issue: None

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions:All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

The `SentryKafkaAuthorizer` throws an exception when describing ACLs via `Kafka AdminClient`

If Sentry contains Kafka authorization policies for any `ConsumerGroup` resource, Kafka authorization policies cannot be described and manipulated via `Kafka AdminClient`. This is due to a conversion error in Sentry. The `SentryKafkaAuthorizer` throws the following exception when converting the `ConsumerGroup` resource type between Sentry and Kafka libraries.

```
kafka.common.KafkaException: CONSUMERGROUP not a valid resourceType name. The valid names are Topic,Group,Cluster,TransactionalId,DelegationToken
```

This issue impacts any application that uses the ACL manipulation methods of `KafkaAdminClient` in Sentry enabled environments.

Workaround: Remove authorization policies for Kafka consumer groups in Sentry.

Affected Versions: CDH 5.x, CDH 6.3.0, 6.3.1, 6.3.2

Fixed Versions: 6.3.3

Apache Issue: SENTRY-2535

Cloudera Issue: CDH-82457

Apache Kudu Known Issues

The following sections describe known issues and workarounds in Kudu, as of the current production release.

Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement

DDL and DML operations can accumulate in the Kudu tablet replica's write ahead log (WAL) during normal operation. Upon the shutdown of a tablet replica (for example, right before removing the replica), information on the accumulated operations (first 50) are printed into the tablet server's INFO log file.

A bug was introduced with the fix for KUDU-2690. The code contains a flipped if-condition that results in de-referencing of an invalid pointer while reporting on a pending ALTER TABLE operation in the tablet replica's WAL. The issue manifests itself in kudu-tserver processes crashing with SIGSEGV (segmentation fault).

The occurrence of the issue is limited to scenarios which result in accumulating at least one pending ALTER TABLE operation in the tablet replica's WAL at the time when the tablet replica is shut down. An example scenario is an ALTER TABLE request (for example, adding a column) immediately followed by a request to drop a tablet (for example, drop a range partition). Another example scenario is shutting down a tablet server while it's still processing an ALTER TABLE request for one of its tablet replicas. A slowness in file system operations increases the chances for the issue to manifest itself.

Apache issue: [KUDU-2690](#)

Component affected: Kudu

Products affected: CDH

Releases affected:

- CDH 6.2.0, 6.2.1
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Kudu clusters with the impacted releases.

Impact: In the worst case, multiple kudu-tserver processes can crash in a Kudu cluster, making data unavailable until the affected tablet servers are started back.

Severity: High

Action required:

- **Workaround:** Avoid dropping range partitions and tablets right after issuing ALTER TABLE request. Wait for the pending ALTER TABLE requests to complete before dropping tablets or shutting down tablet servers.
- **Solution:** Upgrade to CDH 6.3.4 or CDP

Knowledge article: For the latest update on this issue see the corresponding Knowledge article:

[TSB 2020-449: Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement](#)

You get "The user 'kudu' is not part of group 'hive' on the following hosts: " warning by the Host Inspector

If you are using fine grained authorization for Kudu, and you are also using Kudu-HMS integration with HDFS-Sentry sync, then you may get the "The user 'kudu' is not part of group 'hive' on the following hosts: " warning while upgrading to CDH 6.3.

Workaround: Run the following command on all the HMS servers:

```
usermod -aG hive kudu
```

Affected Versions: CDH 6.3 / Kudu 1.10

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider

this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Fault Tolerant Scan Memory Issue

Unlike regular scans, fault tolerant scans will allocate all required memory when the scan begins rather than as it progresses. This can be significant for big tablets. Moreover, this memory usage isn't counted towards the tablet server's overall memory limit, raising the likelihood of the tablet server being out-of-memory killed by the kernel.

Affected Versions: CDH 6.2 / Kudu 1.9 and lower

Apache Issue: [KUDU-2466](#)

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

The following sections describe known issues and workarounds in Oozie, as of the current production release.

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in this release.

Apache Pig Known Issues

There are no known issues in this release.

Cloudera Search Known Issues

The following sections describe known issues and limitations in Search, as of the current production release.

Splitshard of HDFS index checks local filesystem and fails

When performing a shard split on an index that is stored on HDFS, `SplitShardCmd` still evaluates free disk space on the local file system of the server where Solr is installed. This may cause the command to fail, perceiving that there is no adequate disk space to perform the shard split.

Workaround: None

Affected versions: All

Default Solr core names cannot be changed (limitation)

Although it is technically possible to give user-defined Solr core names during core creation, it is to be avoided in the context of Cloudera Search. Cloudera Manager expects core names in the default "collection_shardX_replicaY" format. Altering core names results in Cloudera Manager being unable to fetch Solr metrics for the given core and this, eventually, may corrupt data collection for co-located core, or even shard and server level charts.

Processing UpdateRequest with delegation token throws NullPointerException

When using the Spark Crunch Indexer or another client application which utilizes the SolrJ API to send Solr Update requests with delegation token authentication, the server side processing of the request might fail with a `NullPointerException`.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Apache Issue: SOLR-13921

Cloudera Issue: CDH-82599

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

HBase Lily indexer might fail to write role log files

In certain scenarios the HBase Lily Indexer (Key-Value Store Indexer) fails to write its role log files.

Workaround: None

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82342

Adding a new indexer instance to HBase Lily Indexer fails with GSSException

When Kerberos authentication is enabled and adding a new indexer instance to HBase Lily Indexer (Key-Value Store Indexer), the authentication might fail when Lily is communicating to the HBase Master process, throwing a similar Exception:

```
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid credentials provided (Mechanism level: Failed to find any Kerberos tgt)]
```

Workaround: Ensure that the Lily indexer has a Sentry dependency configured by following these steps:

1. Go to **Cloudera Manager > Key-Value Store indexer > Configuration**.
2. Make sure the **Sentry Service** configuration option points to a Sentry service instance instead of **none**.

The workaround does not require defining any Sentry roles or privileges, it is just to trigger a code execution path which will authenticate the HBase service user.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82566

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with `CrunchIndexerTool`, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the `MapReduceIndexerTool` nor the `HBaseMapReduceIndexerTool`

The `MapReduceIndexerTool` and the `HBaseMapReduceIndexerTool` can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool`. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the "Browse" and "Spell" Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irrecoverably corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using MapReduceIndexerTool or HBaseMapReduceIndexerTool multiple times may produce duplicate entries in a collection.

Repeatedly running the MapReduceIndexerTool on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the HBaseMapReduceIndexerTool unless it is run with more than zero reducers.

Workaround: To avoid this issue, use HBaseMapReduceIndexerTool with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139

Apache Sentry Known Issues

The following sections describe known issues and workarounds in Sentry, as of the current production release.

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.

Affected Versions:

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694

GRANT/REVOKE operations could fail if there are too many concurrent requests

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.

Affected Versions: CDH 5.13.0 and above

Apache Issue: [SENTRY-1855](#)

Cloudera Issue: CDH-56553

Creating large set of Sentry roles results in performance problems

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.

Affected Versions: CDH 5.13.0 and above

Cloudera Issue: CDH-59010

Users can't track jobs with Hive and Sentry

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above

Cloudera Issue: CDH-22890

Column-level privileges are not supported on Hive Metastore views

`GRANT` and `REVOKE` for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

`SELECT` privilege on all columns does not equate to `SELECT` privilege on table

Users who have been explicitly granted the `SELECT` privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as `SELECT COUNT (1)` or `SELECT COUNT (*)` will not work even if you have the `SELECT` privilege on all columns.

There is one exception to this. The `SELECT * FROM TABLE` command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The `EXPLAIN SELECT` operation works without table or column-level privileges

Users are able to run the `EXPLAIN SELECT` operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types `Server` and `URI` are not supported in `SHOW GRANT ROLE roleName on OBJECT objectName`

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|--------------------------|---------------------------------|
| hdfs://absolute/path/ | hdfs://relative/path |
| s3a://bucketname/ | s3a://bucketname |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6.3.x. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

`RDD.repartition()` has different failure handling in Spark 2.4 and may cause job failures

The `RDD.repartition()` transformation, which reshuffles data in the RDD randomly to create either more or fewer partitions and then balances it across the partitions, was using a round-robin method to distribute data that caused incorrect answers to be returned for RDD jobs. This issue has been corrected, but it introduced a behavior change in RDD job failure handling. Now, Spark actively fails a job if there is a fetch failure that was caused by a node failure after repartitioning.

Workaround: Use the `RDD.checkpoint()` method to save the intermediate RDD data to HDFS. First, call `SparkContext.setCheckpointDir(directory: String)` to set the checkpoint directory where the intermediate data will be saved. Note that the directory must be an HDFS path. Then mark the RDD for checkpointing by calling `RDD.checkpoint()` when you use the `RDD.repartition()` transformation.

Apache Issue: [SPARK-23243](#)

Cloudera Issue: CDH-76413

Structured Streaming exactly-once fault tolerance constraints

In Spark Structured Streaming, the exactly-once fault tolerance for `file sink` is valid only for files that are in the manifest. These files are located in the `_spark_metadata` subdirectory of the `file sink` output directory. Only process files that have file names starting with digits. Other temporary files can also appear in this directory, but they should not be processed. Typically, these temporary file names start with a period (".").

You can list the valid manifest files, excluding the temporary files, by using a command like the following, which assumes your output directory is located at `/tmp/output`. As the appropriate user, run the following command to list the valid manifest files:

```
hadoop fs -ls /tmp/output/_spark_metadata/[0-9]*
```

Workaround: None

Affected Versions: CDH 6.1.0 and higher

Cloudera Issue: CDH-75191

Spark SQL does not respect size limit for the varchar type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's `client` mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

Apache Sqoop Known Issues

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (doc import + `--as-parquetfile`) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (`sqoop import --as-parquetfile`) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \${CONDITIONS}" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/5dbcac42-5d69-4e46-88c2-17dbedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a `--target-dir` which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

There are no known issues in this release.

CDH 6.3.0 Release Notes



Important: CDH 6.3.0 and 6.3.1 release repositories were removed from Cloudera Archive on January 1, 2020. Upgrade to CDH 6.3.2 containing the fix for the issue described in the [TSB 2020-432: Potential HDFS data loss due to snapshot usage](#) Knowledge Base article, or to any later CDH version.

The following topics describe new features, fixed issues, incompatible changes, and known issues for CDH 6.3.0:

New Features in CDH 6.3.0

See below for new features in CDH 6.3.0, grouped by component:

OpenJDK 11 support for Cloudera Manager and CDH 6.3 and higher

You can now use OpenJDK 11 with Cloudera Enterprise 6.3.

See:

- [Manually Migrating to OpenJDK](#)
- [Manually Installing OpenJDK](#)
- [Supported JDKs](#) on page 27

When you install OpenJDK 11 in your cluster, it uses the G1GC method for garbage collection for most services, which may require tuning to avoid overcommitting memory. See [Tuning JVM Garbage Collection](#).

OPSAPS-50993, OPSAPS-49390, OPSAPS-51643

Apache Accumulo

There are no notable new features in this release.

Apache Avro

There are no notable new features in this release.

Apache Crunch

There are no notable new features in this release.

Apache Flume

There are no notable new features in this release.

Apache Hadoop

Hadoop Common

There are no notable new features in this release.

HDFS

There are no notable new features in this release.

MapReduce

There are no notable new features in this release.

YARN

YARN Distributed Shell with File Localization

YARN distributed shell is a tool for YARN feature test. The file localization features allows you to localize a file remotely that is defined in the command line.

Queue Based Maximum Container Allocation Limit for Fair Scheduler

The `yarn.scheduler.maximum-allocation-mb` property allows you to limit the overall size of a container on a scheduler-level. The `maxContainerAllocation` property set maximum resources on queue level, expressed in the form of “X mb, Y vcores” or “vcores=X, memory-mb=Y”. If this queue specific configuration is defined, it overrides the scheduler level configuration for that particular queue. If the queue based maximum allocation limit is not set, the scheduler level setting is used.

Apache HBase

There are no notable new features in this release.

Apache Hive / Hive on Spark / HCatalog

Apache Hive

There are no notable new features in this release.

Hive on Spark

There are no notable new features in this release.

HCatalog

There are no notable new features in this release.

Hue

There are no notable new features in this release.

Apache Impala

The following are some of the notable new features in this release of Impala.

Automatic Invalidate/Refresh Metadata

With automatic metadata management enabled, you no longer have to issue INVALIDATE/REFRESH in a number of conditions. In CDH 6.3, the following additional event in Hive Metastore can trigger automatic INVALIDATE / REFRESH of Metadata:

- INSERT into tables and partitions from Impala or from Spark on the same or multiple cluster configuration.

This is a preview feature in CDH 6.3 and is disabled by default.

See [Impala Metadata Management](#) for the information and steps to enable the Zero Touch Metadata feature.

Data Cache for Remote Reads

To improve performance on multi-cluster HDFS environments as well as on object store environments, Impala now caches data for non-local reads (e.g. S3, ABFS, ADLS) on local storage.

This is a preview feature in CDH 6.3 and is disabled by default.

The data cache is enabled with the `--data_cache` startup flag.

See [Impala Remote Data Cache](#) for the information and steps to enable remote data cache.

Query Profile

The following information was added to the Query Profile output for better monitoring and troubleshooting of query performance.

- Network I/O throughput
- System disk I/O throughput

See [Impala Query Profile](#) for generating and reading query profile.

Support for Kudu integrated with Hive Metastore

In CDH 6.3, Kudu is integrated with Hive Metastore (HMS), and from Impala, you can create, update, delete, and query the tables in the Kudu services integrated with HMS.

See [Using Kudu with Impala](#) for information on using Kudu tables in Impala.

See [Using the Hive Metastore with Kudu](#) for upgrading existing tables.

Support for zstd compression for Parquet files

Zstandard (Zstd) is a real-time compression algorithm offering a tradeoff between speed and ratio of compression. Compression levels from 1 up to 22 are supported. The lower the level, the faster the speed at the cost of compression ratio.

Apache Kafka

The following are some of the notable new features in this release of Kafka CDH 6.3.0.

Rebase on Apache Kafka 2.2.1

The Kafka version in CDH 6.3.0 is based on Apache Kafka 2.2.1. For upstream release notes, see Apache Kafka version [2.2.0](#) and [2.2.1](#) release notes.

Kafka Topics Tool Able to Connect Directly to Brokers

The `kafka-topics` command line tool is now able to connect directly to brokers with the `--bootstrap-server` option instead of zookeeper. The old `--zookeeper` option is still available for now. For more information, see [KIP-377](#).

Apache Kudu

The following are some of the notable new features in this release of Kudu:

- Kudu supports both full and incremental table backups via a job implemented using Apache Spark. Additionally, it supports restoring tables from full and incremental backups via a restore job implemented using Apache Spark. See the [backup documentation](#) for more details.
- Kudu can now synchronize its internal catalog with the Apache Hive Metastore, by automatically updating Hive Metastore table entries upon table creation, deletion, and alterations in Kudu. See the [HMS synchronization documentation](#) for more details.
- Kudu also supports native, fine-grained authorization via integration with Apache Sentry. Kudu may now enforce access control policies defined for the Kudu tables and columns, as well as policies defined on the Hive servers and databases that may store the Kudu tables. See the [authorization documentation](#) for more details.
- Kudu's web UI now supports SPNEGO, a protocol for securing HTTP requests with Kerberos by passing negotiation through the HTTP headers. To enable authorization using SPNEGO, set the `--webserver_require_spnego` command line flag.
- Column comments can now be stored in the Kudu tables, and can be updated using the AlterTable API.
- The Java scan token builder can now create multiple tokens per tablet. To use this functionality, call `setSplitSizeBytes()` to specify how many bytes of data each token should scan. The same API is also available in Kudu's Spark integration, where it can be used to spawn multiple Spark tasks per scanned tablet.
- Apache Kudu now has an experimental Kubernetes StatefulSet manifest and Helm chart which can be used to define and provision Kudu clusters using Kubernetes.
- The Kudu CLI now has a rudimentary, YAML-based configuration file support, which can be used to provide cluster connection information via cluster name instead of keying in comma-separated lists of master addresses. See the [cluster name documentation](#) for more details.
- The `kudu perf table_scan` command scans a table and displays a table's row count as well as the time it took to run the scan.
- The `kudu table copy` command copies data from one table to another, within the same cluster or across clusters. Note that this implementation leverages a single client, and therefore, it may not be suitable for large tables.
- The tablet history retention time can now be configured on a table-by-table basis.

The following are some of the notable optimizations and improvements in this release of Kudu:

- The performance of mutations (i.e. UPDATE, DELETE, and re-INSERT) to not-yet-flushed Kudu data has been significantly optimized.
- Predicate performance for primitive columns has been optimized.
- IS NULL and IS NOT NULL predicate performance has been optimized.
- The performance of fetching the tablet locations from the master, for tables with large numbers of partitions has been optimized. This can improve the performance of short-running Spark or Impala queries, as well as user applications which make use of the short-lived client instances.
- The `tableExists()` (Java) and `TableExists()` (C++) APIs are more performant.
- Fault tolerant scans are much more performant and they consume far less memory.
- `kudu cluster ksck` now sends more requests in parallel. This improves the speed when running against clusters with many tables, or when there is a high latency between the node running the CLI and the cluster nodes.
- Kudu's block manager now deletes the spent block containers when needed instead of just at server startup. This reduces the server startup time.
- DNS resolutions are now cached by the Kudu masters, the tablet servers, and the Kudu C++ clients. By default, the time-to-live (TTL) for a resolved DNS entry in the cache is 15 seconds.
- Tables created in Kudu 1.10.0 or later will show their creation time as well as their last alteration time in the web UI.
- The Kudu CLI and the C++ client now support overriding the local username using the `'KUDU_USER_NAME'` environment variable. This enables you to operate against a Kudu cluster using an identity which differs from the local Unix user on the client. Note that this has no effect on secure clusters, where client identity is determined by Kerberos authentication.
- The Kudu C++ client now performs a stricter verification on the input data of the INSERT and the UPSERT operations with respect to the table schema constraints. This helps in spotting the schema violations before sending the data to a tablet server.
- The `KuduScanner` parameter in the Java client is now iterable. Additionally, the `KuduScannerIterator` will automatically make the scanner to keep the calls alive so that the scanners do not time out while iterating.
- A `KuduPartitioner` API has been added to the Java client. The `KuduPartitioner` API allows a client to determine which partition a row falls into without actually writing that row. For example, the `KuduPartitioner` is used in the Spark integration to optionally repartition and pre-sort the data before writing to Kudu.
- The `PartialRow` and the `RowResult` Java APIs have new methods that accept and return Java Objects. These methods are useful when you don't care about autoboxing and your existing type handling logic is based on Java types. See the javadoc for more details.
- The Kudu Java client now logs RPC trace summaries instead of full RPC traces when the log level is `INFO` or higher. This reduces the log noise and makes the RPC issues visible in a more compact format.
- The Kudu servers now display the time at which they were started in their web UIs.
- The Kudu tablet servers now display a table's total column count in the web UI.
- The `/metrics` web UI endpoint now supports filtering data by entity types, entity IDs, entity attributes, and metric names. This can be used to collect important metrics more efficiently when there is a large number of tablets on a tablet server.
- The Kudu rebalancer now accepts the `--ignored_tservers` command line argument, which can be used to ignore the health status of specific tablet servers (i.e. if they are down) when deciding whether or not it is safe to rebalance the cluster.

- The `kudu master list` command now displays the Raft consensus role (a LEADER or a FOLLOWER) of each master in the cluster.
- `kudu table scan` command no longer interleaves its output. It projects all the columns without having to manually list the column names.
- The `kudu perf loadgen` command now supports creating empty tables. The semantics of the special value of 0 for the `--num_rows_per_thread` flag has changed. A value of 0 now indicates that no rows should be generated, and -1 indicates that there should be no limit to the number of rows generated.
- Running the `make install` command after building Kudu from the source will now install the Kudu binaries into appropriate locations.

Apache Oozie

There are no notable new features in this release.

Apache Parquet

There are no notable new features in this release.

Apache Pig

There are no notable new features in this release.

Cloudera Search

There are no notable new features in this release.

Apache Sentry

There are no notable new features in this release.

Apache Spark

There are no notable new features in this release.

Apache Sqoop

There are no notable new features in this release.

Apache Zookeeper

There are no notable new features in this release.

Fixed Issues in CDH 6.3.0

CDH 6.3.0 fixes the following issues:

Kudu Masters unable to join back after a restart

In a multi master Kudu environment, if a master is restarted or goes offline for a few minutes, it can occasionally have trouble joining the cluster on startup. For example, if this happens in case of three kudu masters, and one of the other two masters is stopped or dies during this time, then the overall Kudu cluster is down because the majority of the masters are not running.

This issue is resolved by the [KUDU-2748](#) upstream JIRA.

Products affected: Apache Kudu

Affected version:

- CDH 5.14.0, 5.14.2, 5.14.4
- CDH 5.15.0, 5.15.1, 5.15.2
- CDH 5.16.1, 5.16.2
- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0, 6.2.1

Fixed version:

- CDH 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-442: Kudu Masters unable to join back after a restart](#)

Spark's stage retry logic could result in duplicate data

Apache Spark's retry logic may allow tasks from both a failed output stage attempt and a successful retry attempt to commit output for the same partition.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDS 2.1.0 release 1 and release 2
- CDS 2.2.0 release 1 and release 2
- CDS 2.3.0 release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-1: Spark's stage retry logic could result in duplicate data](#)

Spark's stage retry logic could result in missing data

Apache Spark's retry logic may allow a task from a failed stage attempt to clean up data from its corresponding task in a successful stage retry attempt..

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDS 2.2.0 release 1, release 2
- CDS 2.3.0 release 1, release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-2: Spark's stage retry logic could result in missing data](#)

Shuffle+Repartition on a DataFrame could lead to incorrect answers

When a repartition follows a shuffle, the assignment of rows to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input rows than the original computation. As a result, some rows can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2
- CDS 2.2.0 release 1, release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-3: Shuffle+Repartition on a DataFrame could lead to incorrect answers](#)

Shuffle+Repartition on an RDD could lead to incorrect answers

When a repartition follows a shuffle, the assignment of records to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input records than the original computation. As a result, some records can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2, release 3
- CDS 2.2.0 release 1, release 2, release 3
- CDS 2.3.0 release 1, release 2, release 3

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 4
- CDS 2.2.0 release 4
- CDS 2.3.0 release 4

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-4: Shuffle+Repartition on an RDD could lead to incorrect answers](#)

Kafka Broker Java configuration options in Cloudera Manager 6.2.0 are not applied to the broker JVM process

Cloudera Manager allows the configuration of JVM option for Kafka brokers via the **Additional Broker Java Options (broker_java_opts)** service parameter. In Cloudera Manager 6.2.0, when managing CDH 6.2.0 clusters, *'broker_java_opts'* are ignored when starting the Kafka broker process, resulting in using default JVM configuration options. This can lead to the following problems (depending on other environment variables):

- Kafka broker process does not use the recommended garbage collector settings leading to poor performance and increased resource (heap memory) utilization.
- Kafka broker process allows remote connection to JMX interface making the process vulnerable to remote code execution on the broker nodes.

Products affected: Apache Kafka

Affected version:

- CDH 6.2.0
- Cloudera Manager 6.2.0

Fixed version:

- CDH 6.2.1, 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-377: Kafka Broker Java configuration options in Cloudera Manager 6.2.0 are not applied to the broker JVM process Labels:](#)

XSS Cloudera Manager

Malicious Impala queries can result in Cross Site Scripting (XSS) when viewed in Cloudera Manager.

Products affected: Apache Impala

Releases affected:

- Cloudera Manager 5.13.x, 5.14.x, 5.15.1, 5.15.2, 5.16.1
- Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Users affected: All Cloudera Manager Users

Date/time of detection: November 2018

Severity (Low/Medium/High): High

Impact: When a malicious user generates a piece of JavaScript in the impala-shell and then goes to the Queries tab of the Impala service in Cloudera Manager, that piece of JavaScript code gets evaluated, resulting in an XSS.

CVE: CVE-2019-14449

Immediate action required: There is no workaround, upgrade to the latest available maintenance release.

Addressed in release/refresh/patch:

- Cloudera Manager 5.16.2
- Cloudera Manager 6.0.2, 6.1.1, 6.2.0, 6.3.0

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used due to a sys table change in PostgreSQL from version 9.5 to 9.6. The failure only happens if Oozie uses a JDBC driver earlier than 9.4.1209.

Workaround:

1. After the parcels of the new version are distributed, replace the PostgreSQL JDBC driver with a newer one (version 9.4.1209 or higher) in the new parcel, at the following locations:

- /opt/cloudera/parcels/\${newparcel.version}/lib/oozie/lib/
- /opt/cloudera/parcels/\${newparcel.version}/lib/oozie/libtools/

2. Perform the upgrade.



Note: If you already started the upgrade and the process stops with an error message about missing columns, you can change the drivers at that point of the process as well, and resume the upgrade.

If your cluster is installed from packages, you must change the drivers at the following locations:

- /usr/lib/oozie/libtools/
- /usr/lib/oozie/lib/



Note: You can change the driver after the packages installation, but before running the CDH upgrade wizard. You can also do it during the update process, when the error occurs.

You can download the driver from the [PostgreSQL JDBC driver homepage](#).

Affected Versions: CDH 6.0.0 and higher

Fixed Version: CDH 6.2.1 and higher

Cloudera Issue: CDH-75951

Error when executing Java classes from a CDH cluster running on Ubuntu 18

Using the hadoop command-line interface for executing Java classes that are not in the default package results in error messages similar to the following:

```
#hadoop org.apache.hadoop.conf.Configuration
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.0.p0.914039/bin/./lib/hadoop/libexec//hadoop-functions.sh:
line 2366: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_USER: bad substitution
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.x.p0.914039/bin/./lib/hadoop/libexec//hadoop-functions.sh:
line 2331: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_USER: bad substitution
```

```
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.x.p0.914039/bin/./lib/hadoop/libexec//hadoop-functions.sh:  
line 2426: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_OPTS: bad substitution
```

This issue occurs only in CDH 6.2 clusters running on Ubuntu 18 and the error messages can be safely ignored.

Workaround: Run the java command directly using `hadoop classpath` to get the classpath. For example, instead of `hadoop org.apache.hadoop.conf.Configuration`, you can run `java -cp `hadoop classpath` org.apache.hadoop.conf.Configuration`.

Affected Versions: CDH 6.2.0

Fixed Versions: CDH 6.2.1

Apache Issue: [HADOOP-16167](#)

Connections with Expired Delegation Tokens Remain Active

Connections with expired delegation tokens stay alive even if the token expires. The connection will only terminate if the client disconnects. Once the client is disconnected it will not be able to reconnect with the expired token.

Workaround: N/A

Affected Versions: CDH 6.2.x

Fixed Versions: CDH 6.3.0 and higher

Apache Issue: [KAFKA-7352](#)

Cloudera Issue: N/A

Upstream Issues Fixed

The following upstream issues are fixed in CDH 6.3.0:

Apache Accumulo

There are no notable fixed issues in this release.

Apache Avro

The following issue is fixed in CDH 6.3.0:

- [AVRO-2195](#) - Add Zstandard Codec

Apache Crunch

There are no notable fixed issues in this release.

Apache Flume

There are no notable fixed issues in this release.

Apache Hadoop

The following issues are fixed in CDH 6.3.0:

- [HADOOP-10848](#) - Cleanup calling of `sun.security.krb5.Config`.
- [HADOOP-12760](#) - `sun.misc.Cleaner` has moved to a new location in OpenJDK 9
- [HADOOP-14445](#) - Addendum: Use `DelegationTokenIssuer` to create KMS delegation tokens that can authenticate to all KMS instances.
- [HADOOP-15775](#) - [JDK9] Add missing `javax.activation-api` dependency.
- [HADOOP-15783](#) - [JDK10] `TestSFTPFileSystem.testGetModifyTime` fails.
- [HADOOP-15861](#) - Move `DelegationTokenIssuer` to the right path.
- [HADOOP-15873](#) - Add `JavaBeans Activation Framework API` to `LICENSE.txt`.
- [HADOOP-15997](#) - KMS client always authenticates itself using the credentials from login user, rather than current user.
- [HADOOP-16011](#) - `OsSecureRandom` very slow compared to other `SecureRandom` implementations.

- [HADOOP-16016](#) - TestSSLFactory#testServerWeakCiphers fails on Java 1.8.0_191 or later.
- [HADOOP-16109](#) - Parquet reading S3FileSystem causes an EOF exception.
- [HADOOP-16199](#) - KMSLoadBlanceClientProvider does not select token correctly.
- [HADOOP-16289](#) - Allow extra jsvc startup option in hadoop_start_secure_daemon in hadoop-functions.sh.

HDFS

The following issues are fixed in CDH 6.3.0:

- [HDFS-3246](#) - pRead equivalent for direct read path.
- [HDFS-7663](#) - Erasure Coding: Append on striped file.
- [HDFS-10477](#) - Stopping the decommission of a rack of DataNodes causes the NameNode failover to standby.
- [HDFS-12781](#) - After stopping a DataNode, the DataNode tab in the NameNode UI displays a warning message.
- [HDFS-12818](#) - Support a multiple storage configuration in DataNodeCluster / SimulatedFSDataset.
- [HDFS-13231](#) - Extend visualization for decommissioning and maintenance mode under the DataNode tab in the NameNode UI .
- [HDFS-13677](#) - Dynamic refresh of disk configuration results in overwriting the VolumeMap.
- [HDFS-14046](#) - In-Maintenance icon is missing on the DataNode information page .
- [HDFS-14101](#) - Random failure of testListCorruptFilesCorruptedBlock.
- [HDFS-14111](#) - hdfsOpenFile on HDFS causes unnecessary IO from file offset 0.
- [HDFS-14132](#) - Add BlockLocation.isStriped() to determine if block is replicated or striped.
- [HDFS-14242](#) - OIV WebImageViewer: NPE when param op is not specified.
- [HDFS-14285](#) - libhdfs hdfsRead copies entire array even if its only partially filled.
- [HDFS-14314](#) - fullBlockReportLeaseld should be reset after registering to the NameNode.
- [HDFS-14333](#) - Datanode fails to start if any disk has errors during NameNode registration.
- [HDFS-14348](#) - Fix JNI exception handling issues in libhdfs.
- [HDFS-14359](#) - Inherited ACL permissions masked when parent directory does not exist.
- [HDFS-14389](#) - getAclStatus returns incorrect permissions and owner when an iNodeAttributeProvider is configured.

MapReduce 2

The following issue is fixed in CDH 6.3.0:

- [MAPREDUCE-7190](#) - Add SleepJob additional parameter to make parallel runs distinguishable

YARN

The following issues are fixed in CDH 6.3.0:

- [YARN-9118](#) - Handle exceptions with parsing user defined GPU devices in GpuDiscoverer
- [YARN-9552](#) - FairScheduler: NODE_UPDATE can cause NoSuchElementException

Apache HBase

The following issues are fixed in CDH 6.3.0:

- [HBASE-18484](#) - VerifyRep by snapshot does not work when Yarn/SourceHBase/PeerHBase located in three different HDFS clusters
- [HBASE-19008](#) - Add missing equals or hashCode method(s) to stock Filter implementations
- [HBASE-20586](#) - add support for clusters on different realms
- [HBASE-20662](#) - Increasing space quota on a violated table does not remove SpaceViolationPolicy.DISABLE enforcement
- [HBASE-20851](#) - Change rubocop config for max line length of 100
- [HBASE-21201](#) - Support to run VerifyReplication MR tool without peerid
- [HBASE-21225](#) - Having RPC amp Space quota on a table/namespace doesn't allow space quota to be removed using 'NONE'
- [HBASE-21371](#) - Hbase unable to compile against Hadoop trunk (3.3.0-SNAPSHOT) due to license error
- [HBASE-21402](#) - parent "HBASE-21325 Force to terminate regionserver when abort hang in somewhere"

- [HBASE-21475](#) - Put mutation (having TTL set) added via co-processor is retrieved even after TTL expires
- [HBASE-21535](#) - Zombie Master detector is not working
- [HBASE-21634](#) - Print error message when user uses unacceptable values for LIMIT while setting quotas.
- [HBASE-21636](#) - Enhance the shell scan command to support missing scanner specifications like ReadType, IsolationLevel etc.
- [HBASE-21644](#) - Modify table procedure runs infinitely for a table having region replication > 1
- [HBASE-21658](#) - Should get the meta replica number from zk instead of config at client side
- [HBASE-21684](#) - Throw DNRIOE when connection or rpc client is closed
- [HBASE-21688](#) - Address WAL filesystem issues
- [HBASE-21699](#) - Fixed create table failed when using SPLITS_FILE => 'splits.txt'
- [HBASE-21715](#) - set timeout instead of throwing Exception when calling ProcedureFuture.get in client side.
- [HBASE-21736](#) - Remove the server from online servers before scheduling SCP for it in hbck
- [HBASE-21749](#) - RS UI may throw NPE and make rs-status page inaccessible with multiwal and replication
- [HBASE-21754](#) - ReportRegionStateTransitionRequest should be executed in priority executor
- [HBASE-21764](#) - Size of in-memory compaction thread pool should be configurable
- [HBASE-21775](#) - The BufferedMutator doesn't ever refresh region location cache
- [HBASE-21781](#) - list_deadservers elapsed time is incorrect
- [HBASE-21795](#) - Client application may get stuck (time bound) if a table modify op is called immediately after split op
- [HBASE-21800](#) - RegionServer aborted due to NPE from MetaTableMetrics coprocessor
- [HBASE-21815](#) - Make isTrackingMetrics and getMetrics of ScannerContext public
- [HBASE-21816](#) - Print source cluster replication config directory
- [HBASE-21828](#) - Make sure we do not return CompletionException when locating region
- [HBASE-21829](#) - Use FutureUtils.addListener instead of calling whenComplete directly
- [HBASE-21832](#) - parent "HBASE-21595 Print thread's information and stack traces when RS is aborting forcibly" to branch-2.0/2.1
- [HBASE-21843](#) - RegionGroupingProvider breaks the meta wal file name pattern which may cause data loss for meta region
- [HBASE-21857](#) - Do not need to check clusterKey if replicationEndpoint is provided when adding a peer
- [HBASE-21867](#) - Support multi-threads in HFileArchiver
- [HBASE-21871](#) - Added support to specify a peer table name in VerifyReplication tool
- [HBASE-21884](#) - avoid auto boxing in ugi ref counting for secure bulk load
- [HBASE-21890](#) - Use execute instead of submit to submit a task in RemoteProcedureDispatcher
- [HBASE-21899](#) - Fix missing variables for slf4j Logger
- [HBASE-21900](#) - Infinite loop in AsyncMetaRegionLocator if we can not get the location for meta
- [HBASE-21906](#) - the CallQueueTooBigException related changes in HBASE-21875 to branch-2.1/branch-2.0
- [HBASE-21910](#) - The nonce implementation is wrong for AsyncTable
- [HBASE-21926](#) - Profiler servlet
- [HBASE-21927](#) - Always fail the locate request when error occur
- [HBASE-21930](#) - Deal with ScannerResetException when opening region scanner
- [HBASE-21932](#) - Use Runtime.getRuntime().halt to terminate regionserver when abort timeout
- [HBASE-21934](#) - RemoteProcedureDispatcher should track the ongoing dispatched calls
- [HBASE-21960](#) - RESTServletContainer not configured for REST Jetty server
- [HBASE-21961](#) - Infinite loop in AsyncNonMetaRegionLocator if there is only one region and we tried to locate before a non empty row
- [HBASE-21976](#) - Deal with RetryImmediatelyException for batching request
- [HBASE-21978](#) - Should close AsyncRegistry if we fail to get cluster id when creating AsyncConnection
- [HBASE-21983](#) - Should track the scan metrics in AsyncScanSingleRegionRpcRetryingCaller if scan metrics is enabled
- [HBASE-21991](#) - Fix MetaMetrics issues - [Race condition, Faulty remove logic], few improvements
- [HBASE-22032](#) - KeyValue validation should check for null byte array

- [HBASE-22042](#) - Missing @Override annotation for RawAsyncTableImpl.scan
- [HBASE-22045](#) - Mutable range histogram reports incorrect outliers
- [HBASE-22047](#) - LeaseException in Scan should be retried
- [HBASE-22054](#) - Space Quota: Compaction is not working for super user in case of NO_WRITES_COMPACTIONS
- [HBASE-22070](#) - Checking restoreDir in RestoreSnapshotHelper
- [HBASE-22072](#) - High read/write intensive regions may cause long crash
- [HBASE-22073](#) - /rits.jsp throws an exception if no procedure
- [HBASE-22086](#) - Space Quota issue: Deleting snapshot doesn't update the usage of table
- [HBASE-22094](#) - Throw TableNotFoundException if table not exists in AsyncAdmin.compact
- [HBASE-22097](#) - Modify the description of split command in shell
- [HBASE-22098](#) - HBASE-18667 "Disable error-prone for hbase-protocol-shaded" to branch-2
- [HBASE-22099](#) - HBASE-21895 "Error prone upgrade" to branch-2
- [HBASE-22100](#) - False positive for error prone warnings in pre commit job
- [HBASE-22101](#) - AsyncAdmin.isTableAvailable should not throw TableNotFoundException
- [HBASE-22123](#) - REST gateway reports Insufficient permissions exceptions as 404 Not Found
- [HBASE-22128](#) - Move namespace region then master crashed make deadlock
- [HBASE-22135](#) - AsyncAdmin will not refresh master address
- [HBASE-22144](#) - Correct MultiRowRangeFilter to work with reverse scans
- [HBASE-22177](#) - Do not recreate IOException in RawAsyncHBaseAdmin.adminCall
- [HBASE-22179](#) - Fix RawAsyncHBaseAdmin.getCompactionState
- [HBASE-22185](#) - RAMQueueEntry#writeToCache should freeBlock if any exception encountered instead of the IOException catch block
- [HBASE-22189](#) - Removed remaining usage of StoreFile.getModificationTimeStamp
- [HBASE-22190](#) - SnapshotFileCache may fail to load the correct snapshot file list when there is an on-going snapshot operation
- [HBASE-22200](#) - WALSplitter.hasRecoveredEdits should use same FS instance from WAL region dir
- [HBASE-22225](#) - Profiler tab on Master/RS UI not working w/o comprehensive message
- [HBASE-22230](#) - REST Server drops connection on long scan
- [HBASE-22235](#) - OperationStatus.{SUCCESS|FAILURE|NOT_RUN} are not visible to 3rd party coprocessors
- [HBASE-22236](#) - AsyncNonMetaRegionLocator should not cache HRegionLocation with null location
- [HBASE-22249](#) - Rest Server throws NoClassDefFoundError with Java 11
- [HBASE-22274](#) - Cell size limit check on append considers cell's previous size
- [HBASE-22278](#) - RawAsyncHBaseAdmin should not use cached region location
- [HBASE-22282](#) - Should deal with error in the callback of RawAsyncHBaseAdmin.splitRegion methods
- [HBASE-22291](#) - Fix recovery of recovered.edits files under root dir
- [HBASE-22292](#) - PreemptiveFastFailInterceptor clean repeatedFailuresMap issue
- [HBASE-22324](#) - loss a mass of data when the sequenceId of cells greater than Integer.Max
- [HBASE-22325](#) - AsyncRpcRetryingCaller will not schedule retry if we hit a NotServingRegionException but there is no TableName provided
- [HBASE-22354](#) - master never sets abortRequested, and thus abort timeout doesn't work for it
- [HBASE-22375](#) - Promote AccessChecker to LimitedPrivate
- [HBASE-22378](#) - HBase Canary fails with TableNotFoundException when table deleted during Canary run
- [HBASE-22581](#) - user with "CREATE" permission can grant, but not revoke permissions on created table

Apache Hive

The following issues are fixed in CDH 6.3.0:

- [HIVE-13278](#) - Avoid FileNotFoundException when map/reduce.xml is not available
- [HIVE-14229](#) - The jars in hive.aux.jar.paths are not added to session classpath
- [HIVE-15397](#) - Metadata-only queries may return incorrect results with empty tables
- [HIVE-21363](#) - Ldap auth issue: group filter match should be case insensitive

- [HIVE-21484](#) - Metastore API getVersion() should return real version
- [HIVE-21526](#) - JSONDropDatabaseMessage needs to have the full database object

Hue

The following issues are fixed in CDH 6.3.0:

- [HUE-7712](#) - [spark] Livy-batch not available in HUE 4.1.
- [HUE-8727](#) - [frontend] Chrome browser autofills the user name in the top search and in the left assist filter.
- [HUE-8745](#) - [editor] Support AWS Athena using JDBC Driver.
- [HUE-8747](#) - [editor] Download query result as a task.
- [HUE-8782](#) - [hbase] Support Python 3 in Thrift bindings.
- [HUE-8805](#) - [core] Add basic Query Analytics reporting.
- [HUE-8813](#) - [hbase] HBase examples are not installed on secure cluster
- [HUE-8814](#) - [backend] Allow OIDC username attribute to be customizable
- [HUE-8816](#) - [notebook] Support parsing columns with varchar type.
- [HUE-8817](#) - [core] Improve get_ordered_interpreters performance
- [HUE-8826](#) - [frontend] Can't close log block on services page.
- [HUE-8827](#) - [docs] Update presto website links.
- [HUE-8828](#) - [editor] Fix notebook user's searching not displaying.
- [HUE-8830](#) - [search] Fix js exception from right assist in the dashboard.
- [HUE-8831](#) - [search] Support all SQL dialects in the dashboard autocomplete.
- [HUE-8832](#) - [spark] Support SparkSql in Livy.
- [HUE-8833](#) - [editor] Error - hidden popup menu in the presentation section.
- [HUE-8834](#) - [docker] Simplify the Hue server container.
- [HUE-8836](#) - [core] request.get_host() is broken when HTTP_X_FORWARDED_HOST contains multiple hosts.
- [HUE-8840](#) - [catalog] Fix import to non-Hive tables.
- [HUE-8841](#) - [metadata] Add read-only mode for SQL catalog metadata.
- [HUE-8860](#) - [beeswax] Truncate column size to 5000 if too large.
- [HUE-8864](#) - [search] Loading a dashboard fails to show the proper layout.
- [HUE-8867](#) - [metastore] Expanding columns of a table in left assist fails.
- [HUE-8869](#) - [frontend] Improve the editor icon.
- [HUE-8870](#) - [frontend] Charting sometimes throws an 'UncaughtReferenceError.'
- [HUE-8871](#) - [frontend] Search with "tag" facet should work with Navigator.
- [HUE-8872](#) - [editor] Result column count is off by one when no filter is present.
- [HUE-8873](#) - [jobbrowser] Auto refresh deselects your selection for rerun workflows and schedulers if a job is running.
- [HUE-8874](#) - [security] Privilege checker cannot be cached.
- [HUE-8875](#) - [indexer] '/hue/indexer/indexes' is not found.
- [HUE-8876](#) - [core] Fix the redirect for is_embeddable when 401 is returned.
- [HUE-8878](#) - [oozie] Fix Hive Document Action variable with pre-filled value.
- [HUE-8880](#) - [oozie] Fix KeyError for execute coordinator.
- [HUE-8881](#) - [search] Solr examples cannot be loaded.
- [HUE-8883](#) - [docs] Update the requirements and headers, and troubleshoot for MacOS.
- [HUE-8884](#) - [editor] When executing multiple statements quickly, errors are shown to the user.
- [HUE-8885](#) - [frontend] Downgrade knockout to 3.4.2.
- [HUE-8886](#) - [importer] Changing the "Has Header" checkbox should refresh the importer preview.

Apache Impala

The following issues are fixed in CDH 6.3.0:

- [IMPALA-8322](#) - Confined the impact of slowly completing I/O requests to the issuing query.

- [IMPALA-8444](#) - Fixed a performance regression when building privilege name in an environment secured by Sentry using a large number of privileges per role.
- [IMPALA-7800](#) - Impala now times out new connections after it reaches the maximum number of concurrent client connections. The limit is specified by the `--fe_service_threads` startup flag. The default value is 64 with which 64 queries can run simultaneously. Previously the connection attempts that could not be serviced were hanging infinitely.
- [IMPALA-8283](#) - Fixed the issue where the order of Kudu PRIMARY KEYS can be silently ignored when a Kudu-based table was copied with a changed primary key definition.
- [IMPALA-8177](#) - Fixed log DDL failures in coordinator logs.

Apache Kafka

The following issues are fixed in CDH 6.3.0:

- [KAFKA-4217](#) - Add `KStream.flatTransform`
- [KAFKA-4453](#) - Added code to separate controller connections and requests from the data plane
- [KAFKA-4850](#) - Enable bloomfilters
- [KAFKA-5117](#) - Stop resolving externalized configs in Connect REST API
- [KAFKA-5692](#) - Change `PreferredReplicaLeaderElectionCommand` to use Admin...
- [KAFKA-5994](#) - Log `ClusterAuthorizationException` for all `ClusterAction` requests
- [KAFKA-6627](#) - Prevent config default values overriding ones specified through `--producer-property` on command line.
- [KAFKA-6789](#) - Handle retrieable group errors in AdminClient API
- [KAFKA-6833](#) - Producer should await metadata for unknown partitions
- [KAFKA-7024](#) - Rocksdb state directory should be created before opening the DB
- [KAFKA-7027](#) - Add an overload build method in scala
- [KAFKA-7051](#) - Improve the efficiency of `ReplicaManager`
- [KAFKA-7253](#) - The returned connector type is always null when creating connector
- [KAFKA-7352](#) - KIP-368: Allow SASL Connections to Periodically Re-Authenticate
- [KAFKA-7391](#) - Introduce `close(Duration)` to `Producer` and `AdminClient` instead of `close(long, TimeUnit)`
- [KAFKA-7433](#) - Introduce broker options in `TopicCommand` to use `AdminClient`
- [KAFKA-7503](#) - MINOR: Start Connect REST server in standalone mode to match distributed mode
- [KAFKA-7601](#) - Clear leader epoch cache on downgraded format in append
- [KAFKA-7609](#) - Add Protocol Generator for Kafka
- [KAFKA-7633](#) - Allow Kafka Connect to access internal topics without cluster ACLs
- [KAFKA-7641](#) - Introduce "group.max.size" config to limit group sizes
- [KAFKA-7652](#) - Part I; Fix `SessionStore`'s `findSession(single-key)`
- [KAFKA-7652](#) - Part III; Put to underlying before Flush
- [KAFKA-7672](#) - The local state not fully restored after `KafkaStream` rebalanced, resulting in data loss
- [KAFKA-7692](#) - Fix `ProducerStateManager` `SequenceNumber` overflow
- [KAFKA-7693](#) - Fix `SequenceNumber` overflow in producer
- [KAFKA-7719](#) - Improve fairness in `SocketServer` processors (KIP-402)
- [KAFKA-7738](#) - Track leader epochs in client Metadata
- [KAFKA-7741](#) - Streams exclude javax dependency
- [KAFKA-7755](#) - Look up client host name since DNS entry may have changed
- [KAFKA-7758](#) - Reuse `KGroupedStream/KGroupedTable` with named repartition topics
- [KAFKA-7781](#) - Add validation check for `retention.ms` topic property.
- [KAFKA-7786](#) - Ignore `OffsetsForLeaderEpoch` response if epoch changed while request in flight
- [KAFKA-7789](#) - Fixby increasing the key size for the RSA keys generated for
- [KAFKA-7790](#) - Fix Bugs in Trogdor Task Expiration
- [KAFKA-7792](#) - Add simple `/agent/uptime` and `/coordinator/uptime` health check endpoints
- [KAFKA-7793](#) - Improve the Trogdor command line.
- [KAFKA-7798](#) - Expose embedded clientIds

- [KAFKA-7808](#) - AdminClient#describeTopics should not throw InvalidTopic if topic name is not found
- [KAFKA-7824](#) - Require member.id for initial join group request [KIP-394]
- [KAFKA-7837](#) - Ensure offline partitions are picked up as soon as possible when shrinking ISR
- [KAFKA-7838](#) - Log leader and follower end offsets when shrinking ISR
- [KAFKA-7844](#) - Use regular subproject for generator to fix *All targets
- [KAFKA-7855](#) - Kafka Streams Maven Archetype quickstart fails to compile out of the box
- [KAFKA-7859](#) - Use automatic RPC generation in LeaveGroups
- [KAFKA-7866](#) - Ensure no duplicate offsets after txn index append failure
- [KAFKA-7873](#) - Always seek to beginning in KafkaBasedLog
- [KAFKA-7890](#) - Invalidate ClusterConnectionState cache for a broker if the hostname of the broker changes.
- [KAFKA-7895](#) - Ktable suppress operator emitting more than one record for the same key per window
- [KAFKA-7897](#) - Disable leader epoch cache when older message formats are used
- [KAFKA-7902](#) - Replace original loginContext if SASL/OAUTHBEARER refresh login fails
- [KAFKA-7909](#) - Ensure timely rebalance completion after pending members rejoin or fail
- [KAFKA-7915](#) - Don't return sensitive authentication errors to clients
- [KAFKA-7916](#) - Unify store wrapping code for clarity
- [KAFKA-7920](#) - Do not permit zstd produce requests until IBP is updated to 2.1
- [KAFKA-7935](#) - UNSUPPORTED_COMPRESSION_TYPE if ReplicaManager.getLogConfig returns None
- [KAFKA-7945](#) - Calc refresh time correctly when token created in the past
- [KAFKA-7974](#) - Fix for Avoid zombie AdminClient when node host isn't resolvable
- [KAFKA-7979](#) - Clean up threads and increase timeout in PartitionTest
- [KAFKA-8002](#) - Log dir reassignment stalls if future replica has different segment base offset
- [KAFKA-8011](#) - Fix for race condition causing concurrent modification exception
- [KAFKA-8012](#) - Ensure partitionStates have not been removed before truncating.
- [KAFKA-8014](#) - Extend Connect integration tests to add and remove workers dynamically
- [KAFKA-8040](#) - Streams handle initTransactions timeout
- [KAFKA-8058](#) - Fix ConnectClusterStateImpl.connectors() method
- [KAFKA-8061](#) - Handle concurrent ProducerId reset and call to Sender thread shutdown
- [KAFKA-8062](#) - Do not remove StateListener when shutting down stream thread
- [KAFKA-8065](#) - restore original input record timestamp in forward()
- [KAFKA-8066](#) - Always close the sensors in Selector.close()
- [KAFKA-8069](#) - Fix early expiration of offsets due to invalid loading of expire timestamp
- [KAFKA-8121](#) - Shutdown ZK client expiry handler earlier during close
- [KAFKA-8134](#) - `linger.ms` must be a long
- [KAFKA-8142](#) - Fix NPE for nulls in Headers
- [KAFKA-8150](#) - Fix bugs in handling null arrays in generated RPC code
- [KAFKA-8157](#) - fix the incorrect usage of segment.index.bytes (2.2)
- [KAFKA-8190](#) - Don't update keystore modification time during validation
- [KAFKA-8204](#) - fix Streams store flush order
- [KAFKA-8229](#) - Reset WorkerSinkTask offset commit interval after task commit
- [KAFKA-8240](#) - Fix NPE in Source.equals()
- [KAFKA-8241](#) - Handle configs without truststore for broker keystore update
- [KAFKA-8248](#) - Ensure time updated before sending transactional request
- [KAFKA-8254](#) - Pass Changelog as Topic in Suppress Serdes
- [KAFKA-8277](#) - Fix NPEs in several methods of ConnectHeaders
- [KAFKA-8289](#) - Fix Session Expiration and Suppression (#6654)
- [KAFKA-8290](#) - Close producer for zombie task
- [KAFKA-8298](#) - Fix possible concurrent modification exception
- [KAFKA-8304](#) - Fix registration of Connect REST extensions
- [KAFKA-8306](#) - Initialize log end offset accurately when start offset is non-zero

- [KAFKA-8320](#) - fix retrievable exception package for source connectors
- [KAFKA-8323](#) - Close RocksDBStore's BloomFilter
- [KAFKA-8335](#) - Clean empty batches when sequence numbers are reused
- [KAFKA-8347](#) - Choose next record to process by timestamp
- [KAFKA-8348](#) - Fix KafkaStreams JavaDocs
- [KAFKA-8351](#) - Cleaner should handle transactions spanning multiple segments
- [KAFKA-8363](#) - Fix parsing bug for config providers

Apache Kite

The following issue is fixed in CDH 6.3.0:

- [KITE-1185](#) - Make root temp directory path configurable in HiveAbstractDatasetRepository

Apache Kudu

The following issues are fixed in CDH 6.3.0:

- [KUDU-1868](#) - The Java client no longer fails when the scans take a very long time to return a single block of rows, such as highly selective scans over a large amount of data.
- The SERVICE_UNAVAILABLE errors that caused the Java client to do unnecessary master lookups are handled gracefully.
- The Kudu scan tokens now work correctly when the target table is renamed between the time when the scan token is created and when it is rehydrated into a scanner.
- Kudu's "NTP synchronization wait" behavior at startup now works as expected when Kudu is run in a containerized environment.
- [KUDU-2807](#) - The system doesn't crash when a flush or a compaction overlaps with another compaction.
- [KUDU-2748](#) - Fixed a rare race at startup where the leader master would fruitlessly try to tablet copy to a healthy follower master, causing the cluster to operate as if it had two masters until the master leadership changed.
- [KUDU-2706](#) - Kudu does not crash in libkrb5 when negotiating multiple TLS connections concurrently.
- [KUDU-2721](#) - Kudu no longer crashes at startup on machines with disabled CPUs.

Apache Oozie

The following issues are fixed in CDH 6.3.0:

- [OOZIE-3312](#) - Add support for HSTS.
- [OOZIE-3365](#) - Workflow and coordinator action status remains RUNNING after rerun.
- [OOZIE-3409](#) - Oozie Server : Memory leak in EL evaluation.
- [Oozie-3463](#) - Migrate from com.google.common.base.Charsets to java.nio.charset.StandardCharsets.
- [Oozie-3466](#) - Migrate from com.google.common.io.Closeables to org.apache.commons.io.IOUtils.
- [Oozie-3467](#) - Migrate from com.google.common.base.Stopwatch.
- [OOZIE-3478](#) - Oozie needs execute permission on the submitting users home directory.

Apache Parquet

The following issues are fixed in CDH 6.3.0:

- [PARQUET-1143](#) - Update to Parquet format 2.4.0. Contains Zstandard codec support.
- [PARQUET-1585](#) - Update old external links in the code base

Apache Pig

The following issue is fixed in CDH 6.3.0:

- [PIG-5387](#) - Test failures on JRE 11

Cloudera Search

There are no notable fixed issues in this release.

Apache Sentry

The following issues are fixed in CDH 6.3.0:

- [SENTRY-2440](#) - Add a new thrift API for checking if a user is in admin group
- [SENTRY-2471](#) - Table rename should sync Sentry privilege even without location information
- [SENTRY-2511](#) - Debug level logging on HMSPaths significantly affects performance
- [SENTRY-2522](#) - Add a new thrift API for getting all privileges a user has for a given set of authorizable
- [SENTRY-2523](#) - Fix response of list_sentry_privileges_by_authorizable_and_user API

Apache Spark

The following issues are fixed in CDH 6.3.0:

- [SPARK-13704](#) - [CORE][YARN] Reduce rack resolution time
- [SPARK-24421](#) - [BUILD][CORE] Accessing sun.misc.Cleaner in JDK11
- [SPARK-24421](#) - [CORE][FOLLOWUP] Use normal direct ByteBuffer allocation if Cleaner can't be set
- [SPARK-25429](#) - [SQL] Use Set instead of Array to improve lookup performance
- [SPARK-25946](#) - [BUILD] Upgrade ASM to 7.x to support JDK11
- [SPARK-25984](#) - [CORE][SQL][STREAMING] Remove deprecated .newInstance(), primitive box class constructor calls
- [SPARK-26003](#) - Improve SQLAppStatusListener.aggregateMetrics performance
- [SPARK-26089](#) - [CORE] Handle corruption in large shuffle blocks
- [SPARK-26188](#) - [SQL] FileIndex: don't infer data types of partition columns if user specifies schema
- [SPARK-26349](#) - [PYSPARK] Forbid insecure py4j gateways
- [SPARK-26430](#) - [BUILD][TEST-MAVEN] Upgrade Surefire plugin to 3.0.0-M2
- [SPARK-26507](#) - [CORE] Fix core tests for Java 11
- [SPARK-26536](#) - [BUILD][TEST] Upgrade Mockito to 2.23.4
- [SPARK-26708](#) - [SQL][BRANCH-2.4] Incorrect result caused by inconsistency between a SQL cache's cached RDD and its physical plan
- [SPARK-26839](#) - [SQL] Work around classloader changes in Java 9 for Hive isolation
- [SPARK-26963](#) - [MLLIB] SizeEstimator can't make some JDK fields accessible in Java 9+
- [SPARK-26966](#) - [ML] Update to JPMML 1.4.8
- [SPARK-26986](#) - [ML][FOLLOWUP] Add JAXB reference impl to build for Java 9+
- [SPARK-26986](#) - [ML] Add JAXB reference impl to build for Java 9+
- [SPARK-26990](#) - [SQL][BACKPORT-2.4] FileIndex: use user specified field names if possible
- [SPARK-27094](#) - [YARN] Work around RackResolver swallowing thread interrupt.
- [SPARK-27112](#) - [CORE] : Create a resource ordering between threads to resolve the deadlocks encountered ...
- [SPARK-27121](#) - [REPL] Resolve Scala compiler failure for Java 9+ in REPL
- [SPARK-27122](#) - [CORE] Jetty classes must not be return via getters in org.apache.spark.ui.WebUI
- [SPARK-27178](#) - [K8S] add nss to the spark/k8s Dockerfile
- [SPARK-27260](#) - [SS] Upgrade to Kafka 2.2.0
- [SPARK-27704](#) - Accept zstd and lz4 as parquet compression algorithms. This is basically adding these codecs back according toOriginally these were not supported by CDH parquet and thus Spark support had been adjusted accordingly.
- [SPARK-27794](#) - [R][DOCS] Use https URL for CRAN repo

Apache Sqoop

There are no notable fixed issues in this release.

Apache ZooKeeper

The following issues are fixed in CDH 6.3.0:

- [ZOOKEEPER-271](#) - Better command line parsing in ZookeeperMain.
- [ZOOKEEPER-442](#) - need a way to remove watches that are no longer of interest
- [ZOOKEEPER-1220](#) - ./zkCli.sh 'create' command is throwing ArrayIndexOutOfBoundsException

- [ZOOKEEPER-1392](#) - Request READ or ADMIN permission for getAcl()
- [ZOOKEEPER-1673](#) - Zookeeper don't support cidr in expression in ACL with ip scheme
- [ZOOKEEPER-1748](#) - TCP keepalive for leader election connections
- [ZOOKEEPER-1830](#) - Support command line shell for removing watches
- [ZOOKEEPER-1831](#) - Document remove watches details to the guide
- [ZOOKEEPER-1887](#) - C implementation of removeWatches
- [ZOOKEEPER-1909](#) - removeWatches doesn't return NOWATCHER when there is
- [ZOOKEEPER-1910](#) - RemoveWatches wrongly removes the watcher if multiple watches
- [ZOOKEEPER-1919](#) - Update the C implementation of removeWatches to have it match ZOOKEEPER-1910
- [ZOOKEEPER-2062](#) - RemoveWatchesTest takes forever to run
- [ZOOKEEPER-2141](#) - ACL cache in DataTree never removes entries
- [ZOOKEEPER-2184](#) - Zookeeper Client should re-resolve hosts when connection attempts fail
- [ZOOKEEPER-2237](#) - Port async multi to 3.4 branch
- [ZOOKEEPER-2611](#) - zoo_remove_watchers - can remove the wrong watch
- [ZOOKEEPER-3263](#) - JAVA9/11 Warnings: Illegal reflective access in zookeeper's kerberosUtil

Unsupported Features in CDH 6.3.0

This page lists the unsupported features in CDH 6.3.x. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.3.0](#) on page 675.

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 637
- [YARN Unsupported Features](#) on page 637

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.3.x:

- ACLs for the NFS gateway ([HADOOP-11004](#))
- Aliyun Cloud Connector ([HADOOP-12756](#))
- Allow HDFS block replicas to be provided by an external storage system ([HDFS-9806](#))
- Consistent standby Serving reads ([HDFS-12943](#))
- HDFS Router Based Federation ([HDFS-10467](#))
- More than two NameNodes ([HDFS-6440](#))
- NameNode Federation ([HDFS-1052](#))
- Openstack Swift ([HADOOP-8545](#))
- SFTP FileSystem ([HADOOP-5732](#))
- Storage policy satisfier ([HDFS-10285](#))
- Upgrade Domain ([HDFS-7541](#))

YARN Unsupported Features

The following YARN features are not supported in CDH 6.3.x:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers
- Distributed Scheduling
- Docker on YARN (DockerContainerExecutor)
- Native Services
- New Aggregated Log File Format
- Node Labels

- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Estimator Service
- Resource Profiles
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.3.x:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction
- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation
- Client tarball
- Rolling upgrade from CDH 5 HBase versions

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.3.x:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution

- Hive Metastore - Derby
- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))
- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka features are not supported in CDH 6.3.x:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.

- Kafka Connect is included in CDH 6.3.x, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.3.x, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.3.x:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.3.x:

- Pig on Tez is not supported in CDH 6.1.x ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.3.x:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.3.x:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

([Known Issue](#))

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.x, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.3.x:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)

- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is supported, but the following features of it *are not*:
 - Continuous processing, which is still experimental, is not supported
 - Stream static joins with HBase have not been tested and therefore are not supported
- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.3.x:

- `import-mainframe`

Cloudera Connector for Netezza

Cloudera Connector for Netezza is not supported in CDH 6.3.x

Incompatible Changes in CDH 6.3.0



Important:

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.3.0, grouped by component:

Apache Accumulo

CDH 6.3.0 introduces no new incompatible changes for Apache Accumulo.

Apache Avro

API Changes

One method was removed in CDH 6.0.0:

```
GenericData.toString (Object datum, StringBuilder buffer)
```

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires `GenericEnumSymbol` - likely to break current Generic API users that often have `String` or `Java Enum` for these fields
- [AVRO-1502](#): Avro Objects now `Serializable` - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be `HTrace`
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.

- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).
- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. The only additional configuration required to use HBase2Sink is to replace the component name in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

com.google.common.collect.ImmutableMap

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

- [HDFS Incompatible Changes](#) on page 641
- [MapReduce](#) on page 643
- [YARN](#) on page 643

HDFS Incompatible Changes

CDH 6.2.0 introduces no new incompatible changes for HDFS.

CDH 6.1.0 introduces no new incompatible changes for HDFS.

CDH 6.0.1 introduces no new incompatible changes for HDFS.

CDH 6.0.0, introduces the following incompatible changes for HDFS:

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.
- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSClient#mkdirs` and `DFSClient#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.
- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.
 - All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.
- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0
- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.

- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0
 - asm from 3.2 to 5.0.4

MapReduce

CDH 6.2.0 introduces no new incompatible changes for MapReduce.

CDH 6.0.0, introduces the following incompatible changes:

- Support for MapReduce v1 has been dropped from CDH 6.0.0.
- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

CDH 6.2.0 introduces no new incompatible changes for YARN.

CDH 6.1.0 introduces no new incompatible changes for YARN.

CDH 6.0.1 introduces no new incompatible changes for YARN.

CDH 6.0.0 introduces no new incompatible changes for YARN.

Apache HBase

CDH 6.2.x contains the following downstream HBase incompatible change:

`hbase.security.authorization`

The default value for `hbase.security.authorization` has been changed from `true` to `false`. Secured clusters should make sure to explicitly set it to `true` in XML configuration file before upgrading to one of these versions ([HBASE-19483](#)). `True` as the default value of `hbase.security.authorization` was changed because not all clusters need authorization. (History: [HBASE-13275](#)) Rather, only the clusters which need authorization should set this configuration as `true`.

Incompatible Changes

For more information about upstream incompatible changes, see the Apache Reference Guide [Incompatible Changes](#) and [Upgrade Paths](#).

CDH 6.1.0 introduces the following incompatible changes for HBase:

- [HBASE-20270](#): Error triggered command help is no longer available.
- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.

CDH 6.0.x introduces the following upstream HBase incompatible changes:

- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.
- Public interface API changes:
 - [HBASE-15607](#): Admin
 - [HBASE-19112](#), [HBASE-18945](#): Cell
 - Region, Store, HBaseTestingUtility
- [HBASE-18792](#): `hbase-2` needs to defend against `hbck` operations
- [HBASE-15982](#): Interface `ReplicationEndpoint` extends Guava's `Service`.
- [HBASE-18995](#): Split `CellUtil` into public `CellUtil` and `PrivateCellUtil` for Internal use only.
- [HBASE-19179](#): Purged the `hbase-prefix-tree` module and all references from the code base.
- [HBASE-17595](#): Add partial result support for small/limited scan; Now small scan and limited scan could also return partial results.
- [HBASE-16765](#): New default split policy, `SteppingSplitPolicy`.
- [HBASE-17442](#): Move most of the replication related classes from `hbase-client` to `hbase-replication` package.

- [HBASE-16196](#): The bundled JRuby 1.6.8 has been updated to version 9.1.9.0.
- [HBASE-18811](#): Filters have been moved from Public to LimitedPrivate.
- [HBASE-18697](#): Replaced hbase-shaded-server jar with hbase-shaded-mapreduce jar.
- [HBASE-18640](#): Moved mapreduce related classes out of hbase-server into separate hbase-mapreduce jar .
- [HBASE-19128](#): Distributed Log Replay feature has been removed.
- [HBASE-19176](#): Hbase-native-client has been removed.
- [HBASE-17472](#): Changed semantics of granting new permissions. Earlier, new grants would override previous permissions, but now, the new and existing permissions get merged.
- [HBASE-18374](#): Previous "mutate" latency metrics has been renamed to "put" metrics.
- [HBASE-15740](#): Removed Replication metric source.shippedKBs in favor of source.shippedBytes.
- [HBASE-13849](#): Removed restore and clone snapshot from the WebUI.
- [HBASE-13252](#): The concept of managed connections in HBase (deprecated before) has now been extinguished completely, and now all callers are responsible for managing the lifecycle of connections they acquire.
- [HBASE-14045](#): Bumped thrift version to 0.9.2.
- [HBASE-5401](#): Changes to number of tasks PE runs when clients are mapreduce. Now tasks == client count. Previous we hardcoded ten tasks per client instance.

Changed Behavior

CDH 6.1.x contains the following HBase behavior changes:

- [HBASE-14350](#): Assignment Manager v2 - Split/Merge have moved to the Master; it runs them now. Hooks around Split/Merge are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-18271](#): Moved to internal shaded netty.
- [HBASE-17343](#): Default MemStore to be CompactingMemStore instead of DefaultMemStore. In-memory compaction of CompactingMemStore demonstrated sizable improvement in HBase's write amplification and read/write performance.
- [HBASE-19092](#): Make Tag IA.LimitedPrivate and expose for CPs.
- [HBASE-18137](#): Replication gets stuck for empty WALs.
- [HBASE-17513](#): Thrift Server 1 uses different QOP settings than RPC and Thrift Server 2 and can easily be misconfigured so there is no encryption when the operator expects it.
- [HBASE-16868](#): Add a replicate_all flag to replication peer config. The default value is true, which means all user tables (REPLICATION_SCOPE != 0) will be replicated to peer cluster.
- [HBASE-19341](#): Ensure Coprocessors can abort a server.
- [HBASE-18469](#): Correct RegionServer metric of totalRequestCount.
- [HBASE-17125](#): Marked Scan and Get's setMaxVersions() and setMaxVersions(int) as deprecated. They are easy to misunderstand with column family's max versions, so use readAllVersions() and readVersions(int) instead.
- [HBASE-16567](#): Core is now up on protobuf 3.1.0 (Coprocessor Endpoints and REST are still on protobuf 2.5.0).
- [HBASE-14004](#): Fix inconsistency between Memstore and WAL which may result in data in remote cluster that is not in the origin (Replication).
- [HBASE-18786](#): FileNotFoundException opening a StoreFile in a primary replica now causes a RegionServer to crash out where before it would be ignored (or optionally handled via close/reopen).
- [HBASE-17956](#): Raw scans will also read TTL expired cells.
- [HBASE-17017](#): Removed per-region latency histogram metrics.
- [HBASE-19483](#): Added ACL checks to RSGroup commands - On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands.
- [HBASE-19358](#): Added ACL checks to RSGroup commands (HBASE-19483): On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands. Improved stability of splitting log when do failover.
- [HBASE-18883](#): Updated our Curator version to 4.0 - Users who experience classpath issues due to version conflicts are recommended to use either the hbase-shaded-client or hbase-shaded-mapreduce artifacts.
- [HBASE-16388](#): Prevent client threads being blocked by only one slow region server - Added a new configuration to limit the max number of concurrent request to one region server.
- [HBASE-15212](#): New configuration to limit RPC request size to protect the server against very large incoming RPC requests. All requests larger than this size will be immediately rejected before allocating any resources.

- [HBASE-15968](#): This issue resolved two long-term issues in HBase: 1) Puts may be masked by a delete before them, and 2) Major compactions change query results. Offers a new behavior to fix this issue with a little performance reduction. Disabled by default. See the issue for details and caveats.
- [HBASE-13701](#): SecureBulkLoadEndpoint has been integrated into HBase core as default bulk load mechanism. It is no longer needed to install it as a coprocessor endpoint.
- [HBASE-9774](#): HBase native metrics and metric collection for coprocessors.
- [HBASE-18294](#): Reduce global heap pressure: flush based on heap occupancy.

Apache Hive/Hive on Spark/HCatalog

Apache Hive

The following changes are introduced to Hive in CDH 6.0.0, and are not backwards compatible:

- [Change in RLIKE and REGEXP Use](#) on page 1248
- [UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting](#) on page 1248
- [Support for UNION DISTINCT](#) on page 1249
- [OFFLINE and NO_DROP Options Removed from Table and Partition DDL](#) on page 1250
- [DESCRIBE Query Syntax Change](#) on page 1250
- [CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names](#) on page 1250
- [Reserved and Non-Reserved Keyword Changes in HiveQL](#) on page 1250
- [Apache Hive API Changes in CDH 6.0.0](#) on page 1252
- [Apache Hive Configuration Changes in CDH 6.0.0](#) on page 1253
- [HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes](#) on page 1256
- [Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column](#) on page 1256
- [Hive Logging Framework Switched to SLF4J/Log4j 2](#) on page 1256
- [Deprecated Parquet Java Classes Removed from Hive](#) on page 1256
- [Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms](#) on page 1257
- [S3N Connector Is Removed from CDH 6.0](#) on page 1257
- [Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request](#) on page 1257
- [Support Added for Escaping Carriage Returns and New Line Characters for Text Files \(LazySimpleSerDe\)](#) on page 1258
- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1258

Change in RLIKE and REGEXP Use

A change in Hive to improve support for multiple columns restricts how you can use RLIKE, also called REGEXP, to compare operands. `RLIKE (A, B)` is no longer supported. `A RLIKE B` continues to be supported. See [Hive-11600](#).

Changing Table File Format from ORC with the ALTER TABLE Command Not Supported in CDH 6

Changing the table file format from ORC to another file format with the ALTER TABLE command is not supported in CDH 6 (it returns an error).

UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting

Prior to this change, Hive performed implicit casts when data types from different type groups were specified in queries that use `UNION ALL`. For example, before CDH 6.0, if you had the two following tables:

Table "one"

| one.col_1 | one.col_2 | one.col_3 |
|-----------|-----------|-----------|
| 21 | hello_all | b |

Where `col_1` datatype is `int`, `col_2` datatype is `string`, and `col_3` datatype is `char(1)`.

Table "two"

| two.col_4 | two.col_5 | two.col_6 |
|-----------|-----------|-----------|
| 75.0 | abcde | 45 |

Where `col_4` datatype is `double`, `col_5` datatype is `varchar(5)`, and `col_6` datatype is `int`.

And you ran the following `UNION ALL` query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS
col_3 FROM two;
```

You received the following result set:

| _u1.col_1 | _u1.col_2 | _u1.col_3 |
|-----------|-----------|-----------|
| 75.0 | abcde | 4 |
| 21.0 | hello | b |

Note that this statement implicitly casts the values from table `one` with the following errors resulting in data loss:

- `one.col_1` is cast to a `double` datatype
- `one.col_2` is cast to a `varchar(5)` datatype, which truncates the original value from `hello_all` to `hello`
- `one.col_3` is cast to a `char(1)` datatype, which truncates the original value from `45` to `4`

In CDH 6.0, no implicit cast is performed across different type groups. For example, `STRING`, `CHAR`, and `VARCHAR` are in one type group, and `INT`, `BIGINT`, and `DECIMAL` are in another type group, and so on. So, in CDH 6.0 and later, the above query that uses `UNION ALL`, returns an exception for the columns that contain datatypes that are not part of a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**

- `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
- The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.

- **Behavior in CDH 6:**

- `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.

- Specifying these clauses before the `UNION ALL` clause results in a parsing error.
- The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:
 - `ENABLE | DISABLE NO_DROP [CASCADE]`
 - `ENABLE | DISABLE OFFLINE`
 - `ALTER TABLE ... IGNORE PROTECTION`
- The following support has also been removed from the `HiveMetastoreClient` class:

The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, ``data``). *Non-reserved keywords* can be used as table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|---------|------------|------------|----------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |
| START | | | |

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|----------|-----------|-----------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |
| BOOLEAN | BOTH | BY | CREATE |
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|--------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLTIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|---------------|---------|-------------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |
| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252
- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a `CLOB` data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like "=", "<>", and "!=" might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with `CLOB` data types. There is no equivalent "<>" operator that is compatible with `CLOB`. So there is no equivalent operator for the above example that uses the "<>" inequality operator. The equivalent for "=" is the `LIKE` operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253
- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with `GROUP BY` and `ORDER BY` Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(`hive.server2.enable.impersonation`\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on `hive.enforce.bucketing`](#) and the [topic on `hive.enforce.sorting`](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property

controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.
3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned table but do not filter on the partition column. | <code>false</code> |

| Configuration Property | Description | Default Value |
|---|--|--------------------|
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)
- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (`hive.server2.enable.impersonation`) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`
 - **Description:** Sets the file format in which a query's intermediate results are stored.
3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:

```
org.apache.hive.service.cli.thrift
```

To the following *new* namespace:

```
org.apache.hive.service.rpc.thrift
```

- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale of 5, the value returned for zero was returned as 0. *Now*, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the INPUTFORMAT to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat` and set the OUTPUTFORMAT to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`
- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanUp(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|--|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |

| Column Name | Description |
|----------------|---|
| REF_GENERATION | Specifies how values in the SELF_REFERENCING_COL_NAME column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the SerDe property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, 'r' or 'n' cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the [LazySerDeParameters class](#). For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

There are no incompatible changes in this release.

Apache Impala

Port Change for SHUTDOWN Command

The `SHUTDOWN` command for shutting down a remote server used the backend port in CDH 6.1. Starting in CDH 6.2, the command uses the KRPC port, e.g. `:shutdown('host100:27000')`.

Apache Kafka

Incompatible Changes Introduced in CDH 6.3.0

Default Consumer Group ID Change

The default consumer group ID has been changed from the empty string (`"`) to `null`. Consumers that use the new default group ID will not be able to subscribe to topics, and fetch or commit offsets. The empty string as consumer group ID is deprecated but will be supported until a future major release. Old clients that rely on the empty string group id will now have to explicitly provide it as part of their consumer configuration. For more information, see [KIP-289](#).

Incompatible Changes Introduced in CDH 6.2.1

CDH 6.2.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.2.0



Warning: Kafka in CDH 6.2.0 is based on Apache Kafka 2.1.0, which contains a change to the internal schema used to store consumer offsets. As a result of this change, downgrading Kafka to a version lower than CDH 6.2.0 is **NOT** possible once Kafka has been upgraded to CDH 6.2.0 or higher.

Default Behaviour Changes

Kafka CDH 6.2.0. Introduces the following default behaviour changes:

- Unclean leader election is automatically enabled by the controller when `unclean.leader.election.enable` config is dynamically updated by using per-topic config override.

- Diagnostic data bundles collected by Cloudera Manager from now on include information on Kafka topics. The bundle includes the information exposed by the following two commands:
 - `kafka-topics --describe`
 - `kafka-topics --list`

Incompatible Changes Introduced in CDH 6.1.1

CDH 6.1.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.1.0

Scala-based Client API Removed

Scala-based clients were deprecated in a previous release and are removed as of CDH 6.1.0.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are effected:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Default Behaviour Change

[KAFKA-7050](#): The default value for `request.timeout.ms` is decreased to 30 seconds. In addition, a new logic is added that makes the `JoinGroup` requests ignore this timeout.

Incompatible Changes Introduced in CDH 6.0.1

CDH 6.0.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.0.0

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see the previous entry). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`
- `kafka.tools.ExportZkOffset`
- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- `GroupCoordinatorNotAvailableException`
- `GroupLoadInProgressException`
- `NotCoordinatorForGroupException`
- `kafka.common.KafkaStorageException`

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Apache Kudu

There are no incompatible changes in this release.

Apache Oozie

There are no incompatible changes in this release.

Apache Parquet

Packages and Group ID Renamed

As a part of the Apache incubation process, all Parquet packages and the project's group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|-----------------------------------|
| Java Package Names | <code>parquet.*</code> | <code>org.apache.parquet.*</code> |
| Group ID | <code>com.twitter</code> | <code>org.apache.parquet</code> |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update *.java files:

| Before | After |
|---------------------------------------|--|
| <code>import parquet.*;</code> | <code>import org.apache.parquet.*;</code> |

Update pom.xml:

| Before | After |
|---|--|
| <pre> <dependency> <groupId> com.twitter </groupId> <version> \${parquet.version} </version> </dependency> </pre> | <pre> <dependency> <groupId> org.apache.parquet </groupId> <version> \${parquet.version} </version> </dependency> </pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Pig

The following change is introduced to Pig in CDH 6.0 and is not a backwards compatible change. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0

JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 43: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|---|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |
| VAR (stats) | Generates the variance of a set of values. | variance | None |
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 659. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 659. |
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way to filter using a logical disjunction over many values. | IN | None |

For more information about using Hive UDFs, see https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 44: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|-----------|----------|------------|
| | | |

| | | |
|------------------------------------|---|---|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |
| Examples: | <pre> register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); } </pre> | <pre> define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc)); </pre> |

Although DataFu StreamingQuantile and StreamingMedian might appear to match Hive's percentile_approx function, Pig cannot consume percentile_approx.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 45: DataFu Functions with No Hive UDF Equivalent

| | | |
|----------------------------|-----------------------------|--------------------------------|
| AppendToBag (bags) | AssertUDF (util) | BagConcat (bags) |
| BagGroup (bags) | BagLeftOuterJoin (bags) | BagSplit (bags) |
| BoolToInt (util) | CountEach (bags) | DistinctBy (bags) |
| EmptyBagToNull (bags) | EmptyBagToNullFields (bags) | Enumerate (bags) |
| FirstTupleFromBag (bags) | HaversineDistInMiles (geo) | IntToBool (util) |
| MarkovPairs | NullToEmptyBag (bags) | PageRank (linkanalysis) |
| PrependToBag (bags) | ReservoirSample (sampling)* | ReverseEnumerate (bags) |
| SampleByKey (sampling)* | SessionCount (sessions) | Sessionize (sessions) |
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with TABLESAMPLE in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

The following changes are introduced in CDH 6.1

In CDH 6.1 Cloudera Search is rebased on Apache Solr 7.4.

Deprecations

- Enabling/disabling `autoAddReplicas` cluster-wide with the API is deprecated. Use `suspend/resume` trigger APIs with `name=".auto_add_replicas"` instead.
- In the `ReplicationHandler`, the `master.commitReserveDuration` sub-element is deprecated. Configure a direct `commitReserveDuration` element instead for use in all modes (leader, follower, cloud).

Removals

- The old Leader-In-Recovery implementation (implemented in Solr 4.9) has been removed and replaced. Solr supports rolling upgrades from old 7.x versions of Solr to future 7.x releases until the last release of the 7.x major version. This means that to upgrade to Solr 8, you will have to be on Solr 7.3 or higher.
- The throttling mechanism used to limit the rate of processed autoscaling events has been removed. This deprecates the `actionThrottlePeriodSeconds` setting in the `set-properties` command of Autoscaling API. Use the `triggerCooldownPeriodSeconds` parameter to pause event processing.
- The `RunExecutableListener` event listener was removed for security reasons. If you want to listen to events caused by updates and commits, or you want to optimize, write your own listener as native Java class as part of a Solr plugin.

For more information see the [Apache Solr 7.4 Release Notes](#).

The following changes are introduced in CDH 6.0

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.
- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

Apache Sentry contains the following incompatible change in CDH 6.0.0:

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.
- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.

- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.
Since compile-time type-safety in Python and R is not a language feature, the concept of `Dataset` does not apply to these languages' APIs. Instead, `DataFrame` remains the primary programming abstraction.
- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

CDH 6.2.0 introduces no new incompatible changes for Apache Sqoop.

The following changes are introduced in CDH 6.0, and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0. Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a CHAR or VARCHAR column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to `true` to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPSWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with `hcatalog` jobs or when `hive import` with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile
format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with `--hcatalog-table <HIVE_VIEW>`

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the `--hcatalog-table` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table"
--hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using `EscapeUtils`. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySQL after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of `--input-null-string` and `--input-null-non-string` options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using `--direct` connector and a MySQL database

The MySQL direct connector does not support the `--null-string`, `--null-non-string`, `--input-null-string`, and `--input-null-non-string` options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

There are no incompatible changes in this release.

Timezone Names Unsupported in Impala in CDH 6.3.0

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|------------|------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |

| | |
|--|--------------------------------|
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |

| | |
|--|----------------------|
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |

| | |
|------------------------------|---------------------------|
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |

| | |
|--|------------------------------|
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |
| FJST | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |

| | |
|--------------------|-------------------|
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |

| | |
|-------------------------------|--------------------|
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |

| | |
|--------------------------------|----------------------|
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |

| | |
|----------------------------|----------------------|
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |

| | |
|---------------------------------|------------------------|
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymsk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |
| Srednekolymsk Time | Asia/Srednekolymsk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |

| | |
|---------------------|---------------------|
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |

| | |
|-------------------------------|--------------------|
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |

| | |
|--------------------|--------------------|
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.3.0

The following sections describe the known issues in CDH 6.3.0, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-1000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.



Important: If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can workaround the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|----------------------------------|---|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.

5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
10. Click **Save Changes**.
11. Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.
10. Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|-----------------------|---|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

(1) Ensure that the kernel is up to date.

- **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
- **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
- **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

There are no notable known issues in this release of Apache Accumulo.

Apache Crunch Known Issues



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

Apache Flume Known Issues

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to false.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to Invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x
- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

HDFS

Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH
- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.
- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

HDFS Snapshot corruption

A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Products affected: HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0 - 6.2.1, 6.3.0, 6.3.1, 6.3.2

Users affected: Any clusters with HDFS Snapshots enabled

Impact: A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Standby NameNode detects the inconsistent snapshot data structure and shuts itself down. To recover from this situation, the fsimage must be repaired and put back into both NameNodes' fsimage directory for the Standby NameNode to start normally. The Active NameNode stays up. However no fsimage checkpoint is performed because the Standby NameNode is down.

This problem can also prevent snapshots from being deleted or files within snapshots being listed. The following is an example of a typical error:

```
hdfs dfs -deleteSnapshot /path snapshot_123
deleteSnapshot: java.lang.IllegalStateException
```

The recovery of the corrupt fsimage can result in the loss of snapshots.

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: Alternatively, avoid using snapshots. Cloudera BDR uses snapshots automatically when the relevant directories are snapshottable. Hence, we strongly recommend avoiding the upgrade to the affected releases if you are using BDR. For information and instructions, see [Enabling and Disabling HDFS Snapshots](#).

Addressed in release/refresh/patch: CDH 6.3.3

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-390: HDFS Snapshot corruption](#)

OIV ReverseXML processor fails

The HDFS OIV ReverseXML processor fails if the XML file contains escaped characters.

Affected Versions: CDH 6.x

Apache Issue: [HDFS-12828](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:
 - Install CDH using Cloudera Manager; *or*
 - Start the NFS gateway as root; *or*
 - [Start the NFS gateway without using packages](#); *or*
 - You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the portmap.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to 777 on .snapshot directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

Permissions for `dfs.namenode.name.dir` incorrectly set

Hadoop daemons should set permissions for the `dfs.namenode.name.dir` (or `dfs.name.dir`) directories to `drwx-----` (700), but in fact these permissions are set to the file-system default, usually `drwxr-xr-x` (755).

Workaround: Use `chmod` to set permissions to 700.

Affected Versions: All CDH versions

Apache Issue: [HDFS-2470](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
java.lang.NullPointerException at
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler
- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

Using OpenJDK 11 on CDH6.3 and above requires re-installation of YARN MapReduce Framework JARs

Because several Java internal APIs are removed in JDK11, using older versions of MR Framework JARs will fail MR/Hive jobs, with the following error:

```

...
2019-07-18 14:54:52,483 ERROR [main] org.apache.hadoop.mapreduce.v2.app.MRAppMaster:
Error starting MRAppMaster
java.lang.NoSuchMethodError: sun.nio.ch.DirectBuffer.cleaner()Lsun/misc/Cleaner;
    at org.apache.hadoop.crypto.CryptoStreamUtils.freeDB(CryptoStreamUtils.java:41)
    at org.apache.hadoop.crypto.CryptoInputStream.freeBuffers(CryptoInputStream.java:687)
    at org.apache.hadoop.crypto.CryptoInputStream.close(CryptoInputStream.java:320)
    at java.base/java.io.FilterInputStream.close(FilterInputStream.java:180)
...

```

Workaround:

1. Go to the YARN service.
2. Select Actions > Install YARN MapReduce Framework JARs and click Install YARN MapReduce Framework JARs
3. To verify, you will find the new MR Framework JARs under the MR Application Framework Path (default: `/user/yarn/mapreduce/mr-framework/`) For example:

```

..
hdfs dfs -ls /user/yarn/mapreduce/mr-framework/
Found 5 items
-rw-r--r-- 332 yarn hadoop 215234466 2018-07-19 11:40
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.0-mr-framework.tar.gz
-rw-r--r-- 97 yarn hadoop 263033197 2018-05-18 18:38
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.0.x-mr-framework.tar.gz
-rw-r--r-- 331 yarn hadoop 222865312 2018-11-08 14:39
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.1.0-mr-framework.tar.gz
-rw-r--r-- 327 yarn hadoop 232020483 2019-02-25 22:46
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.2.0-mr-framework.tar.gz
-rw-r--r-- 326 yarn hadoop 234641649 2019-07-23 15:49
/user/yarn/mapreduce/mr-framework/3.0.0-cdh6.3.0-mr-framework.tar.gz
...

```

Cloudera Bug: CDH-81350

NodeManager fails because of the changed default location of container executor binary

The default location of container-executor binary and .cfg files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`. Because of this change, if you did not have the mount options `-noexec` and `-nosuid` set on `/opt`, the NodeManager can fail to start up as these options are set on `/var`.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the `-noexec` and `-nosuid` mount options on `/var` or change the container-executor binary and .cdf path using the `CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR` environment variable.

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, Enable Fair Scheduler Continuous Scheduler is turned off by default.

Workaround: Turn off `Enable Fair Scheduler Continuous Scheduling` in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on `Fair Scheduler Assign Multiple Tasks`.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated `mapred-site.xml` that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

GPU or Custom Resource Type User Jobs can Fail After Recovery

When a GPU or other custom resource goes offline when it has containers that use that particular resource and they have not reached completion, after the restart the application will start to recover. However, if the resource is not available anymore the job that uses that resource will fail.

Workaround: N/A

Affected Versions: CDH 6.2.0, CDH 6.3.0

Cloudera Issue: CDH-77649

NodeManager Fails if GPU Use Is Enabled without any Configured GPU

When **Enable GPU Usage** is enabled for a NodeManager and there is no properly configured GPU device in that node, the NodeManager will not start.

Workaround: Disable **Enable GPU Usage** for that NodeManager in Cloudera Manager.

Affected Versions: CDH 6.2.0, CDH 6.3.0

Apache Issue: [YARN-9217](#)

Apache HBase Known Issues

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.
2. Find the **Enable Audit Collection** property and clear it.
3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x
- HDP 3.1.5

- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.
 - If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:
 - Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
 - At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x

- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for hbase-site.xml →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom hbase-site →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each RegionServer under the RegionServer/Server JMX metrics endpoint. When short circuit reads are not enabled, this metric will be zero. When short circuit reads are enabled and the data locality for this RegionServer is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Default limits for PressureAwareCompactionThroughputController are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP
- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4

- **Workaround:**
 - Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
 - An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

Data loss with restore snapshot

The restore snapshot command causes data loss when the target table was split or truncated after snapshot creation.

Products affected: HBase

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0
- CDH 6.3.0

User affected: Users relying on Restore Snapshot functionality.

Impact: Restored table could have missing data when split or truncate happened after snapshot creation.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not use Restore Snapshot. The same functionality can be achieved if the table is deleted and Clone Snapshot is used instead of restoring a table's state to the snapshot.

```
hbase> disable 'table'
hbase> drop 'table'
hbase> clone_snapshot 'snapshot_name', 'table'
hbase> enable 'table'
```

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-379: Data loss with restore snapshot](#)

CDH users must not use Apache HBase's OfflineMetaRepair tool

OfflineMetaRepair helps you to rebuild the HBase meta table from the underlying file system. This tool is often used to correct meta table corruption or loss. It is designed to work only with `hbase-1.x` (CDH 5.x). Users must not run the OfflineMetaRepair tool against CDH 6.x since it uses `hbase-2.x`. If a user runs OfflineMetaRepair tool in CDH 6.x, then it will break or corrupt the HBase meta table.

If you have already corrupted your meta table or you believe your meta table requires the use of something like the former OfflineMetaRepair tool, do not attempt any further changes, contact Cloudera Support.

Products affected: CDH

Releases affected:

- CDH 6.0.0, 6.0.1

- CDH 6.1.0, 6.1.1
- CDH 6.2.0
- CDH 6.3.0

User affected: Clusters with HBase installed.

Impact: Cluster becomes inoperable.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not run OfflineMetaRepair tool.

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-376: CDH users must not use Apache HBase's OfflineMetaRepair tool](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a DataNode can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different DataNodes, meaning that there will be one RegionServer per DataNode per HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

IntegrationTestReplication fails if replication does not finish before the verify phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

ExportSnapshot or DistCp operations may fail on the Amazon s3a:// protocol

`ExportSnapshot` or `DistCp` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO later. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

Export to Azure Blob Storage (the `wasb://` or `wasbs://` protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController postOperation problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive/HCatalog/Hive on Spark/Hive Metastore Known Issues

This topic contains:

- [Hive Known Issues](#)
- [HCatalog Known Issues](#)
- [Hive on Spark Known Issues](#)
- [Hive Metastore Known Issues](#) on page 693

Hive Known Issues

Query with an empty WHERE clause problematic if vectorization is off

Specific WHERE clauses cause problems if vectorization is off. For example,

```
SELECT COUNT (DISTINCT cint) FROM alltypesorc WHERE cstring1;
SELECT 1 WHERE 1;
```

If vectorization is turned on and no rules turn off the vectorization, queries run as expected.

Workaround: Rewrite queries with casts or equals.

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-15408](#)

Cloudera Issue: CDH-81649

Query with DISTINCT can fail if vectorization is on

A query can fail when vectorization is turned on, the query contains DISTINCT, and other rules do not turn off the vectorization. A query-specific error message appears, for example:

```
Error: Error while compiling statement: FAILED: SemanticException
org.apache.hadoop.hive.ql.metadata.HiveException: The column KEY._col2:0._col0 is not
in the vectorization context column map {KEY._col0=0, KEY._col1=1, KEY._col2=2}.
(state=42000,code=40000)
```

Workaround: Turn off vectorization for such queries as follows:

```
set hive.vectorized.execution.enabled=false;
```

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-19032](#)

Cloudera Issue: CDH-81341

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: Arithmetic exception [divide by] 0. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the `SELECT` clause on large values in columns with the data type of `BIGINT` might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are `BIGINT` data types in the `SELECT` clause of the query, incorrect results might be returned. Comparison operators include `==`, `!=`, `<`, `<=`, `>`, and `>=`. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference of values in such columns is out of range for a `LONG` (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 - (-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a `LONG` (64-bit) data type can hold.

Workaround: Use a `DECIMAL` type instead of `BIGINT` for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the ORDER BY clause is not supported for SELECT * queries

When column positions are specified in ORDER BY clauses, they are not honored for SELECT * queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

ALTER PARTITION ... SET LOCATION does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use ALTER PARTITION ... SET LOCATION on S3 or between S3 and HDFS. The rest of the ALTER PARTITION commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Commands run against an Oracle-backed metastore might fail

Commands run against an Oracle-backed Metastore fail with error:

```
javax.jdo.JDODataStoreException Incompatible data type for column TBLS.VIEW_EXPANDED_TEXT
: was CLOB (datastore),
but type expected was LONGVARCHAR (metadata). Please check that the type in the datastore
and the type specified in the MetaData are consistent.
```

This error might occur if the metastore is run on top of an Oracle database with the configuration property `datanucleus.validateColumns` set to true.

Workaround: Set `datanucleus.validateColumns=false` in the `hive-site.xml` configuration file.

Affected Versions: All CDH versions

Cannot create archive partitions with external HAR (Hadoop Archive) tables

ALTER TABLE ... ARCHIVE PARTITION is not supported on external tables.

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types Server and URI are not supported in "SHOW GRANT ROLE *roleName* on OBJECT *objectName*" statements

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

Change in Precision of trigonometric functions for Hive Queries with JDK 11

If your Hive queries use trigonometric functions (such as degrees-to-radians, radians-to-degrees, or `sin`) there may be a difference in the output of the 15th decimal place.

Cloudera Bug: CDH-81322

Logging differences create Supportability Issues

In the event you need Apache Hive support from Cloudera, the availability of logs is critical. Some CDH releases do not enable `log4j2` logging for Hive by default. Because of this, logs are not generated. Furthermore, the specified CDH releases are not configured to remove old log files to make room for new ones. This can cause the new logs to be lost. When Hive logs are missing, Support cannot troubleshoot Hive problems efficiently.

Components affected: Hive

Products affected: Hive

Releases affected:

- CDH 6.1
- CDH 6.2
- CDH 6.3

Users affected: Hive users

Severity: Medium

Impact: The absence of Hive log files causes delays in troubleshooting Hive problems.

Action required: Manually configure `log4j2` logging, and delete old log files to make room for new ones.

1. Open Cloudera Manager.
2. Select **Clusters > HIVE**.
3. Click the **Configuration** tab.
4. In the Search field, enter Hive Metastore Server Logging Advanced Configuration Snippet (Safety Valve).
5. Add the following XML to the field (or switch to Editor mode, and enter each property and its value in the fields provided).

```
<property>
  <name>rootLogger.appenderRefs</name>
  <value>root, console, DRFA, PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.name</name>
  <value>org.apache.hadoop.hive.q1.log.PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.level</name>
  <value>DEBUG</value>
</property>
<property>
  <name>appender.DRFA.filePattern</name>
  <value>${log.dir}/${log.file}.%i</value>
</property>
<property>
  <name>appender.DRFA.strategy.fileIndex</name>
  <value>min</value>
</property>
```

6. In the Search field, enter HiveServer2 Logging Advanced Configuration Snippet (Safety Valve).
7. Add the XML properties from step 5.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-384: Logging differences in CDH 6 create Supportability Issues](#)

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

Hive on Spark (HoS) Known Issues

A query fails with `IllegalArgumentException` Size requested for unknown type: `java.util.Collection`

An example of a query that fails due to this issue is:

```
WITH t2 AS
(SELECT array(1,2) AS c1
UNION ALL SELECT array(2,3) AS c1)
SELECT collect_list(c1)
FROM t2
```

Workaround: Create a table to store the array data.

Affected Versions: 6.3.x, 6.2.x, 6.1.x

Cloudera Issue: CDH-80169

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form "client.RpcRetryingCaller: Call exception...", then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hive Metastore Known Issues

HMS Read Authorization: `get_num_partitions_by_filter` Ignores Authorization

A user can get the number of partitions of a table regardless of the user's permissions

HMS Read Authorization: `Get_Partitions_With_Auth` Returns All Partitions in a Table When User Has Select Access to One Column

When a user does not have any privilege on that table, including access to any of its columns, then the user has no access to the table's partition metadata. If a user has select permission on any one column of a table, then the can get all metadata of the partitions for the table, including columns that the user does not have any permission on.

HMS Read Authorization: `Partition_Name_To_Vals` Is Not Protected by Read Authorization

A user can get the partition values of a valid partition name regardless of their permissions.

HMS Notifications API is Not Protected by Server Side Read Authorization

A user without any privileges cannot get metadata of a database or a table from the HMS server. However, it is possible for such a user to access the metadata changes.

Hue Known Issues

The following sections describe known issue and workaround in Hue for CDH 6.2.0:

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - *The Add Description* field in the Table schema browser does not sanitize user inputs as expected.
- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower
- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower
- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls

Issuing DDL statements using Hue's Impala editor or invoking Hue's "Refresh Cache" function in the left-side metadata browser results in Hue issuing INVALIDATE METADATA calls to the Impala service. This call is expensive and can result in a significant system impact, up to and including full system outage, when repeated in sufficient volume. This has been corrected in HUE-8882.

Components affected:

- Hue
- Impala

Products affected:

- Cloudera Enterprise 5
- Cloudera Enterprise 6

Releases affected:

- CDH 5.15.1, 5.15.2
- CDH 5.16.x
- CDH 6.1.1
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: End-users using Impala editor in Hue.

Severity: High

Impact: Users running DDL statements using the Hue Impala editor or invoking Hue's Refresh Cache function causes INVALIDATE METADATA commands to be sent to Impala. Impala's metadata invalidation is an expensive operation and could cause impact on the performance of subsequent queries, hence leading to the potential for significant impact on the entire cluster, including the potential for whole-system outage.

Action required:

- CDH 6.x customers: Upgrade to CDH 6.3.4 that contains the fix.
- CDH 5.x customers: Contact Cloudera Support for further assistance.

Apache issue: [HUE-8882](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls](#)

Hue Silently Disables StartTLS in LDAP Connections

There are two mechanisms to secure communication to an LDAP server. One is to use an 'ldaps' connection, where all traffic is encrypted inside a TLS tunnel - much like 'https'. The other is to use 'StartTLS', where traffic begins unencrypted in the "ldap" protocol and then upgrades itself to a TLS connection.

If StartTLS is enabled in the Hue configuration but the 'ldap_cert' parameter is not configured, then Hue silently disables StartTLS.

StartTLS will not be used for synchronization or import, even if StartTLS is enabled and the 'ldap_cert' parameter is set.

The result is that connections that the administrator assumes to be secured, using StartTLS, are not actually secure.

CVE: CVE-2019-19146

Date/time of detection: 22nd March, 2019

Detected by: Ben Gooley, Cloudera

Severity (Low/Medium/High): 8.8 High [CVSS AV:N/AC:L/PR:N/UI:R/S:U/C:H/I:H/A:H](#)

Products affected: CDH

Releases affected:

- CDH 5.x
- CDH 6.1.0
- CDH 6.1.1
- CDH 6.2.0
- CDH 6.2.1
- CDH 6.3.0

Users affected: All users who are using StartTLS enabled in the Hue configuration when using LDAP as Authentication Backend to login in Hue.

Impact: Sensitive data exposure.

Immediate action required:

- **Upgrade (recommended):** Update to a version of CDH containing the fix.
- **Workaround:** Use “ldaps” instead of “ldap” and StartTLS.

Addressed in release/refresh/patch: CDH 6.3.1 and above

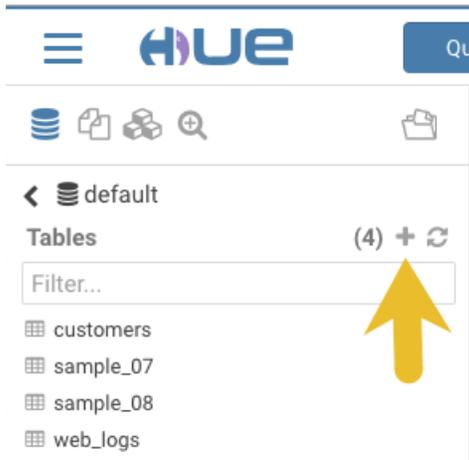
Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-371: Hue Silently Disables StartTLS in LDAP Connections](#)

Table Browser Must Be Refreshed to View Tables Created with the Data Import Wizard

When you create a new table from a file by using the Data Import Wizard, the newly created table columns do not display in the Table Browser until you refresh it.

For example:

1. Create a table from the sample file `web_logs_2.csv` by clicking the plus sign in the left panel, which launches the Data Import Wizard:



2. After you define the table, click **Submit** to generate the new table:

Pick data from file /user/admin/2015_11_19/web_logs_2.csv

Move it to table default.web_logs_2

DESTINATION

Name default.web_logs_2

PROPERTIES

Format Text

Extras

Partitions + Add partition

FIELDS

| | | | | | |
|------|---------|------|--------|---------------------|---------------------|
| Name | field_1 | Type | bigint | 1480895575574446081 | 1480895575574446082 |
| Name | field_2 | Type | string | hbase | static |
| Name | field_3 | Type | bigint | 595 | 831 |
| Name | field_4 | Type | string | Hyderabad | Hyderabad |

Back Submit

Define table characteristics.

Click to generate table.

3. After you generate the new table, you can see it listed on the left assist panel, but when you click the table name to display the columns, an error displays:

default

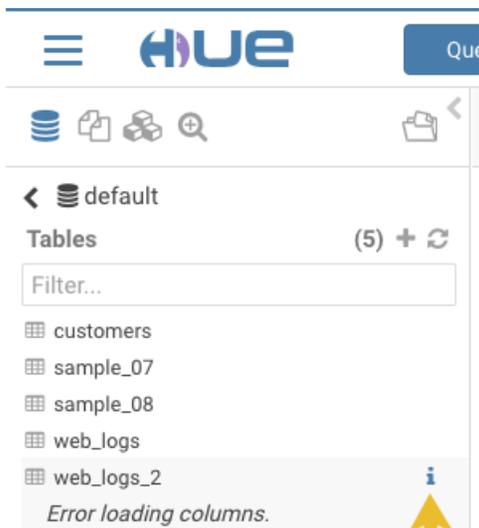
Tables (5) +

Filter...

- customers
- sample_07
- sample_08
- web_logs
- web_logs_2**
Error loading columns.

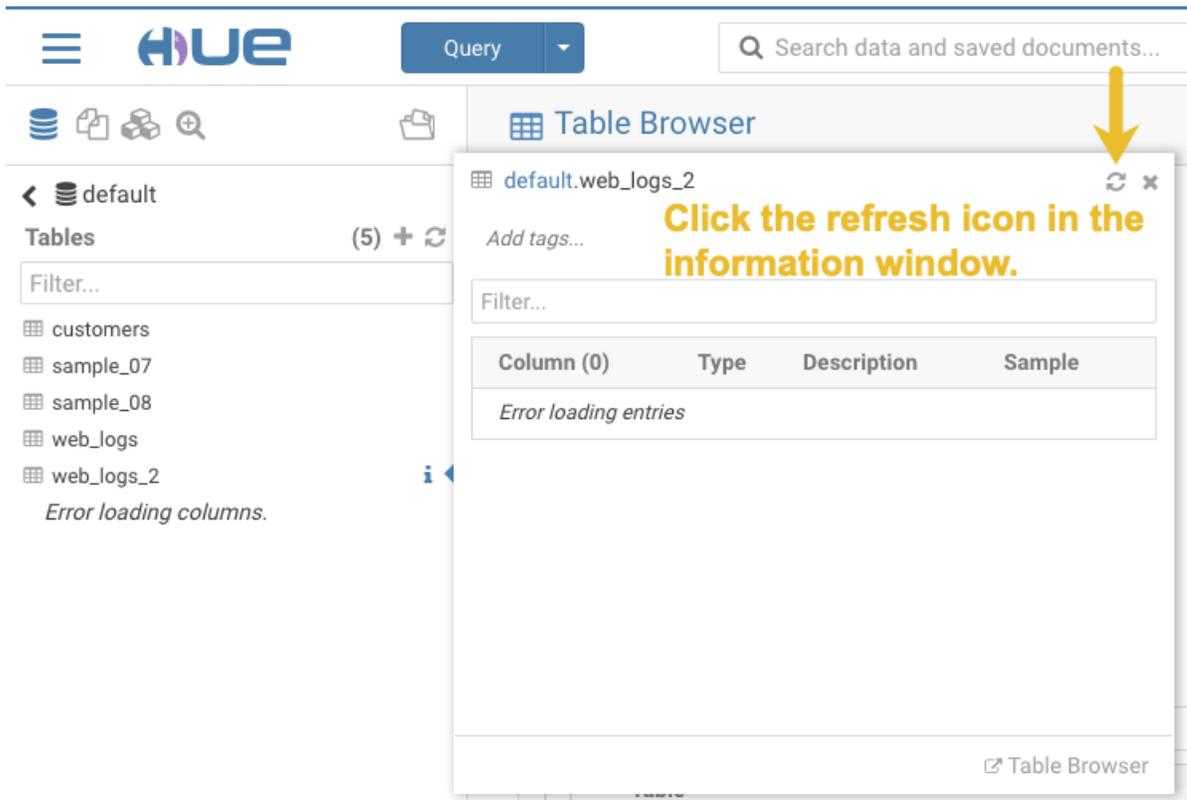
Workaround:

1. Click the information icon that is adjacent to the new table:



Click the information icon.

2. In the information window that opens, click the refresh icon in the upper right corner to view the table columns:



Click the refresh icon in the information window.

Using the refresh icon in the information window is the least expensive way to refresh the page so performance is not affected.

Affected Version(s): CDH 6.2.0

Cloudera Issue: CDH-77238

Hue does not support the Spark App

Hue does not currently support the Spark application.

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname` only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization

is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \((string\) [=:].*` And the replacement could be for example: `secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

.

Products affected:

- CDP Private Cloud Base
- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: [CVE-2021-28131](#)

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

System-wide auth-to-local mapping not applied correctly to Kudu service account

Due to system `auth_to_local` mapping, the principal may be mapped to some local name.

When running with Kerberos enabled, you may hit the following error message where `<random-string>` is some random string which doesn't match the primary in the Kerberos principal.

```
WARNINGS: TransmitData() to X.X.X.X:27000 failed: Remote error: Not authorized:
{username='<random-string>', principal='impala/redacted'} is not allowed to access
DataStreamService
```

Workaround: Start Impala with the `--use_system_auth_to_local=false` flag to ignore the system-wide `auth_to_local` mappings configured in `/etc/krb5.conf`.

Affected Versions: CDH 5.15, CDH 6.1 and higher

Apache Issue: [KUDU-2198](#)

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate
section memory!
terminate called after throwing an instance of
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>
>'
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max
echo 2000000 > /proc/sys/kernel/pid_max
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)

Breakpad minidumps can be very large when the thread count is high

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump

file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the impalad daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Incorrect result due to constant evaluation in query with outer join

An `OUTER JOIN` query could omit some expected result rows due to a constant such as `FALSE` in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
  INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
  RIGHT JOIN alltypes a3 ON a1.year = a1.bigint_col;
+-----+
| Explain String |
+-----+
| Estimated Per-Host Requirements: Memory=1.00KB VCores=1 |
| 00:EMPTYSET |
+-----+
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a `LIKE` operator is an escaped `\%` character, it does not match a `%` final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: impala::Coordinator::ValidateCollectionSlots

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Configuration needed for Flume to be compatible with Impala

For compatibility with Impala, the value for the Flume HDFS Sink `hdfs.writeFormat` must be set to `Text`, rather than its default value of `Writable`. The `hdfs.writeFormat` setting must be changed to `Text` before creating data files with Flume; otherwise, those files cannot be read by either Impala or Hive.

Resolution: This information has been requested to be added to the upstream Flume documentation.

Affected Versions: All CDH 6 versions

Cloudera Issue: CDH-13199

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null", "string"]` instead of `["string", "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Set limits on size of expression trees

Very deeply nested expressions within queries can exceed internal Impala limits, leading to excessive memory usage.

Workaround: Avoid queries with extremely large expression trees. Setting the query option `disable_codegen=true` may reduce the impact, at a cost of longer query runtime.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4551](#)

Impala does not support running on clusters with federated namespaces

Impala does not support running on clusters with federated namespaces. The `impalad` process will not start on a node running such a filesystem based on the `org.apache.hadoop.fs.viewfs.ViewFs` class.

Workaround: Use standard HDFS on all Impala nodes.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-77](#)

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for `impalad_flags`** to specify the load balancer address with the HiveServer2 port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

Unable to Correctly Parse the Terabyte Unit

Impala does not support parsing strings that contain "TB" when used as a unit for terabytes. The flags related to memory limits may be affected, such as the flags for scratch space and data cache.

Workaround: Use other supported units to specify values, e.g. GB or MB.

Affected Versions: CDH 6.3.x and lower versions

Fixed Versions: CDH 6.4.0

Apache Issue: [IMPALA-8829](#)

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

Casting scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.3.1

Apache Kafka Known Issues

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to true.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: [KAFKA-2561](#)

Cloudera Issue: None

The Idempotent and Transactional Capabilities of Kafka are Incompatible with Sentry

The idempotent and transactional capabilities of Kafka are not compatible with Sentry. The issue is due to Sentry being unable to handle authorization policies for Kafka transactions. As a result, users cannot use Kafka transaction in combination with Sentry.

Workaround: Use the Sentry super user in applications where idempotent producing is a requirement or disable Sentry.

Affected Versions: CDK 4.0 and later, CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.3.0

Fixed Versions: CDH 6.2.1, 6.3.1

Apache Issue: N/A

Cloudera Issue: CDH-80606

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions: All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

The `SentryKafkaAuthorizer` throws an exception when describing ACLs via `Kafka AdminClient`

If Sentry contains Kafka authorization policies for any `ConsumerGroup` resource, Kafka authorization policies cannot be described and manipulated via `Kafka AdminClient`. This is due to a conversion error in Sentry. The `SentryKafkaAuthorizer` throws the following exception when converting the `ConsumerGroup` resource type between Sentry and Kafka libraries.

```
kafka.common.KafkaException: CONSUMERGROUP not a valid resourceType name. The valid names are Topic,Group,Cluster,TransactionalId,DelegationToken
```

This issue impacts any application that uses the ACL manipulation methods of KafkaAdminClient in Sentry enabled environments.

Workaround: Remove authorization policies for Kafka consumer groups in Sentry.

Affected Versions: CDH 5.x, CDH 6.3.0, 6.3.1, 6.3.2

Fixed Versions: 6.3.3

Apache Issue: SENTRY-2535

Cloudera Issue: CDH-82457

Apache Kudu Known Issues

The following are known bugs and issues in Kudu. Note that this list is not exhaustive, and is meant to communicate only the most important known issues.

Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement

DDL and DML operations can accumulate in the Kudu tablet replica's write ahead log (WAL) during normal operation. Upon the shutdown of a tablet replica (for example, right before removing the replica), information on the accumulated operations (first 50) are printed into the tablet server's INFO log file.

A bug was introduced with the fix for KUDU-2690. The code contains a flipped if-condition that results in de-referencing of an invalid pointer while reporting on a pending ALTER TABLE operation in the tablet replica's WAL. The issue manifests itself in kudu-tserver processes crashing with SIGSEGV (segmentation fault).

The occurrence of the issue is limited to scenarios which result in accumulating at least one pending ALTER TABLE operation in the tablet replica's WAL at the time when the tablet replica is shut down. An example scenario is an ALTER TABLE request (for example, adding a column) immediately followed by a request to drop a tablet (for example, drop a range partition). Another example scenario is shutting down a tablet server while it's still processing an ALTER TABLE request for one of its tablet replicas. A slowness in file system operations increases the chances for the issue to manifest itself.

Apache issue: [KUDU-2690](#)

Component affected: Kudu

Products affected: CDH

Releases affected:

- CDH 6.2.0, 6.2.1
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Kudu clusters with the impacted releases.

Impact: In the worst case, multiple kudu-tserver processes can crash in a Kudu cluster, making data unavailable until the affected tablet servers are started back.

Severity: High

Action required:

- **Workaround:** Avoid dropping range partitions and tablets right after issuing ALTER TABLE request. Wait for the pending ALTER TABLE requests to complete before dropping tablets or shutting down tablet servers.
- **Solution:** Upgrade to CDH 6.3.4 or CDP

Knowledge article: For the latest update on this issue see the corresponding Knowledge article:

[TSB 2020-449: Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement](#)

You get "The user 'kudu' is not part of group 'hive' on the following hosts: " warning by the Host Inspector

If you are using fine grained authorization for Kudu, and you are also using Kudu-HMS integration with HDFS-Sentry sync, then you may get the "The user 'kudu' is not part of group 'hive' on the following hosts: " warning while upgrading to CDH 6.3.

Workaround: Run the following command on all the HMS servers:

```
usermod -aG hive kudu
```

Affected Versions: CDH 6.3 / Kudu 1.10

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Fault Tolerant Scan Memory Issue

Unlike regular scans, fault tolerant scans will allocate all required memory when the scan begins rather than as it progresses. This can be significant for big tablets. Moreover, this memory usage isn't counted towards the tablet server's overall memory limit, raising the likelihood of the tablet server being out-of-memory killed by the kernel.

Affected Versions: CDH 6.2 / Kudu 1.9 and lower

Apache Issue: [KUDU-2466](#)

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |

| Field | Usage Notes |
|----------------------------------|---|
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in Parquet.

Apache Phoenix Known Issues

The current release includes the following known issue:

Phoenix artifacts in the Maven repository have transitive dependencies on some unavailable artifacts

The Phoenix artifacts provided in the Maven repository have transitive dependencies on some artifacts that are not available either in the Apache central repository, the Cloudera provided CDH repository, or the Cloudera provided Phoenix repository.

Workaround: When you add a dependency on any of the provided Maven Phoenix artifacts, you must exclude the `org.glassfish.web:javax.servlet.jsp` artifact. For example:

```
<dependency>
  <groupId>org.apache.phoenix</groupId>
  <artifactId>phoenix-core</artifactId>
  <version>5.0.0-cdh6.2.0</version>
  <exclusions>
    <exclusion>
      <groupId>org.glassfish.web</groupId>
      <artifactId>javax.servlet.jsp</artifactId>
    </exclusion>
  </exclusions>
</dependency>
```

Affected Versions: CDH 6.2.0, 6.2.1, 6.3.0

Cloudera Issue: CDH-81419

Apache Pig Known Issues

There are no known issues in this release.

Cloudera Search Known Issues

The current release includes the following known limitations:

Splitshard of HDFS index checks local filesystem and fails

When performing a shard split on an index that is stored on HDFS, `SplitShardCmd` still evaluates free disk space on the local file system of the server where Solr is installed. This may cause the command to fail, perceiving that there is no adequate disk space to perform the shard split.

Workaround: None

Affected versions: All

Default Solr core names cannot be changed (limitation)

Although it is technically possible to give user-defined Solr core names during core creation, it is to be avoided in the context of Cloudera Search. Cloudera Manager expects core names in the default "collection_shardX_replicaY" format. Altering core names results in Cloudera Manager being unable to fetch Solr metrics for the given core and this, eventually, may corrupt data collection for co-located core, or even shard and server level charts.

Processing UpdateRequest with delegation token throws NullPointerException

When using the Spark Crunch Indexer or another client application which utilizes the SolrJ API to send Solr Update requests with delegation token authentication, the server side processing of the request might fail with a NullPointerException.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Apache Issue: SOLR-13921

Cloudera Issue: CDH-82599

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

HBase Lily indexer might fail to write role log files

In certain scenarios the HBase Lily Indexer (Key-Value Store Indexer) fails to write its role log files.

Workaround: None

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82342

Adding a new indexer instance to HBase Lily Indexer fails with GSSException

When Kerberos authentication is enabled and adding a new indexer instance to HBase Lily Indexer (Key-Value Store Indexer), the authentication might fail when Lily is communicating to the HBase Master process, throwing a similar Exception:

```
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid credentials provided (Mechanism level: Failed to find any Kerberos tgt)]
```

Workaround: Ensure that the Lily indexer has a Sentry dependency configured by following these steps:

1. Go to **Cloudera Manager > Key-Value Store indexer > Configuration**.
2. Make sure the **Sentry Service** configuration option points to a Sentry service instance instead of **none**.

The workaround does not require defining any Sentry roles or privileges, it is just to trigger a code execution path which will authenticate the HBase service user.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82566

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with `CrunchIndexerTool`, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the `MapReduceIndexerTool` nor the `HBaseMapReduceIndexerTool`

The `MapReduceIndexerTool` and the `HBaseMapReduceIndexerTool` can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool`. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the “Browse” and “Spell” Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irreversibly corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool` multiple times may produce duplicate entries in a collection.

Repeatedly running the `MapReduceIndexerTool` on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the `HBaseMapReduceIndexerTool` unless it is run with more than zero reducers.

Workaround: To avoid this issue, use `HBaseMapReduceIndexerTool` with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139

Apache Sentry Known Issues

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.

Affected Versions:

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694

GRANT/REVOKE operations could fail if there are too many concurrent requests

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.

Affected Versions: CDH 5.13.0 and above

Apache Issue: [SENTRY-1855](#)

Cloudera Issue: CDH-56553

Creating large set of Sentry roles results in performance problems

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.

Affected Versions: CDH 5.13.0 and above

Cloudera Issue: CDH-59010

Users can't track jobs with Hive and Sentry

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above

Cloudera Issue: CDH-22890

Column-level privileges are not supported on Hive Metastore views

GRANT and REVOKE for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

SELECT privilege on all columns does not equate to SELECT privilege on table

Users who have been explicitly granted the `SELECT` privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as `SELECT COUNT (1)` or `SELECT COUNT (*)` will not work even if you have the `SELECT` privilege on all columns.

There is one exception to this. The `SELECT * FROM TABLE` command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The `EXPLAIN SELECT` operation works without table or column-level privileges

Users are able to run the `EXPLAIN SELECT` operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types `Server` and `URI` are not supported in `SHOW GRANT ROLE roleName on OBJECT objectName`

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|------------------------------------|-----------------------------------|
| <code>hdfs://absolute/path/</code> | <code>hdfs://relative/path</code> |
| <code>s3a://bucketname/</code> | <code>s3a://bucketname</code> |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6.1.x. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

`RDD.repartition()` has different failure handling in Spark 2.4 and may cause job failures

The `RDD.repartition()` transformation, which reshuffles data in the RDD randomly to create either more or fewer partitions and then balances it across the partitions, was using a round-robin method to distribute data that caused incorrect answers to be returned for RDD jobs. This issue has been corrected, but it introduced a behavior change in RDD job failure handling. Now, Spark actively fails a job if there is a fetch failure that was caused by a node failure after repartitioning.

Workaround: Use the `RDD.checkpoint()` method to save the intermediate RDD data to HDFS. First, call `SparkContext.setCheckpointDir(directory: String)` to set the checkpoint directory where the intermediate data will be saved. Note that the directory must be an HDFS path. Then mark the RDD for checkpointing by calling `RDD.checkpoint()` when you use the `RDD.repartition()` transformation.

Apache Issue: [SPARK-23243](#)

Cloudera Issue: CDH-76413

Structured Streaming exactly-once fault tolerance constraints

In Spark Structured Streaming, the exactly-once fault tolerance for `file sink` is valid only for files that are in the manifest. These files are located in the `_spark_metadata` subdirectory of the `file sink` output directory. Only process files that have file names starting with digits. Other temporary files can also appear in this directory, but they should not be processed. Typically, these temporary file names start with a period (".").

You can list the valid manifest files, excluding the temporary files, by using a command like the following, which assumes your output directory is located at `/tmp/output`. As the appropriate user, run the following command to list the valid manifest files:

```
hadoop fs -ls /tmp/output/_spark_metadata/[0-9]*
```

Workaround: None

Affected Versions: CDH 6.1.0 and higher

Cloudera Issue: CDH-75191

Spark SQL does not respect size limit for the varchar type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's `client` mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

Apache Sqoop Known Issues

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (`doc import + --as-parquetfile`) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (sqoop import --as-parquetfile) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \$CONDITIONS" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/5dbcac42-5d69-4e46-88c2-17dbedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a `--target-dir` which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

There are no known issues in this release.

CDH 6.2.x Release Notes

To view release notes for specific CDH 6.2.x releases, see the following:

CDH 6.2.1 Release Notes



Important: CDH 6.2.1 has been replaced with the 6.2.1-patch4069 hotfix release that contains a fix for the issue described in the [TSB 2020-432: Potential HDFS data loss due to snapshot usage](#) Knowledge Base article.

For information about CDH 6.2.x releases, see the [CDH 6.2.x Release Notes](#).

For information about new features, fixed issues, incompatible changes, and known issues in the original 6.2.1 release, see:

New Features in CDH 6.2.1

This is a maintenance release that fixes some important issues. For details, see [Fixed Issues in CDH 6.2.1](#).

Fixed Issues in CDH 6.2.1

CDH 6.2.1 fixes the following issues:

Data loss with restore snapshot

The restore snapshot command causes data loss when the target table was split or truncated after snapshot creation.

Products affected: HBase

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0
- CDH 6.3.0

User affected: Users relying on Restore Snapshot functionality.

Impact: Restored table could have missing data when split or truncate happened after snapshot creation.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not use Restore Snapshot. The same functionality can be achieved if the table is deleted and Clone Snapshot is used instead of restoring a table's state to the snapshot.

```
hbase> disable 'table'
hbase> drop 'table'
hbase> clone_snapshot 'snapshot_name', 'table'
hbase> enable 'table'
```

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-379: Data loss with restore snapshot](#)

CDH users must not use Apache HBase's OfflineMetaRepair tool

OfflineMetaRepair helps you to rebuild the HBase meta table from the underlying file system. This tool is often used to correct meta table corruption or loss. It is designed to work only with hbase-1.x (CDH 5.x). Users must not run the OfflineMetaRepair tool against CDH 6.x since it uses hbase-2.x. If a user runs OfflineMetaRepair tool in CDH 6.x, then it will break or corrupt the HBase meta table.

If you have already corrupted your meta table or you believe your meta table requires the use of something like the former OfflineMetaRepair tool, do not attempt any further changes, contact Cloudera Support.

Products affected: CDH

Releases affected:

- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0
- CDH 6.3.0

User affected: Clusters with HBase installed.

Impact: Cluster becomes inoperable.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not run OfflineMetaRepair tool.

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-376: CDH users must not use Apache HBase's OfflineMetaRepair tool](#)

Potential to bypass transaction and idempotent ACL checks in Apache Kafka

It is possible to manually craft a Produce request which bypasses transaction and idempotent ACL validation. Only authenticated clients with Write permission on the respective topics are able to exploit this vulnerability.

Products affected:

- CDH
- CDK Powered by Apache Kafka

Releases affected:

- CDH versions 6.0.x, 6.1.x, 6.2.0
- CDK versions 3.0.x, 3.1.x, 4.0.x

Users affected: All users who run Kafka in CDH and CDK.

Date/time of detection: September, 2018

Severity (Low/Medium/High):7.1 (High) ([CVSS:3.0/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:H/A:H](#))

Impact: Attackers can exploit this issue to bypass certain security restrictions to perform unauthorized actions. This can aid in further attacks.

CVE: CVE-2018-17196

Immediate action required: Update to a version of CDH containing the fix.

Addressed in release/refresh/patch:

- CDH 6.2.1, 6.3.2
- CDK 4.1.0

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-378: Potential to bypass transaction and idempotent ACL checks in Apache Kafka](#)

Kafka Broker Java configuration options in Cloudera Manager 6.2.0 are not applied to the broker JVM process

Cloudera Manager allows the configuration of JVM option for Kafka brokers via the **Additional Broker Java Options (broker_java_opts)** service parameter. In Cloudera Manager 6.2.0, when managing CDH 6.2.0 clusters, *'broker_java_opts'* are ignored when starting the Kafka broker process, resulting in using default JVM configuration options. This can lead to the following problems (depending on other environment variables):

- Kafka broker process does not use the recommended garbage collector settings leading to poor performance and increased resource (heap memory) utilization.
- Kafka broker process allows remote connection to JMX interface making the process vulnerable to remote code execution on the broker nodes.

Products affected: Apache Kafka

Affected version:

- CDH 6.2.0
- Cloudera Manager 6.2.0

Fixed version:

- CDH 6.2.1, 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-377: Kafka Broker Java configuration options in Cloudera Manager 6.2.0 are not applied to the broker JVM process Labels:](#)

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used due to a sys table change in PostgreSQL from version 9.5 to 9.6. The failure only happens if Oozie uses a JDBC driver earlier than 9.4.1209.

Workaround:

1. After the parcels of the new version are distributed, replace the PostgreSQL JDBC driver with a newer one (version 9.4.1209 or higher) in the new parcel, at the following locations:

- `/opt/cloudera/parcels/${newparcel.version}/lib/oozie/lib/`
- `/opt/cloudera/parcels/${newparcel.version}/lib/oozie/libtools/`

2. Perform the upgrade.



Note: If you already started the upgrade and the process stops with an error message about missing columns, you can change the drivers at that point of the process as well, and resume the upgrade.

If your cluster is installed from packages, you must change the drivers at the following locations:

- `/usr/lib/oozie/libtools/`
- `/usr/lib/oozie/lib/`



Note: You can change the driver after the packages installation, but before running the CDH upgrade wizard. You can also do it during the update process, when the error occurs.

You can download the driver from the [PostgreSQL JDBC driver homepage](#).

Affected Versions: CDH 6.0.0 and higher

Fixed Version: CDH 6.2.1 and higher

Cloudera Issue: CDH-75951

GPU and Custom Resource Types Are Not Added to the YARN Client's Configuration File When Enabled

When GPU or other custom resource type is configured in Cloudera Manager, the appropriate resource (for example `yarn.io/gpu`) is not added to the YARN client's configuration (`yarn-site.xml`) file. As a result, jobs that use GPU or the configured custom resource type will fail.

Workaround: Add the appropriate resource manually to the **YARN Client Advanced Configuration Snippet (Safety Valve) for `yarn-site.xml`**:

1. In Cloudera Manager select YARN service and go to **Configuration**.
2. Search for *YARN Client Advanced Configuration Snippet (Safety Valve) for `yarn-site.xml`*
3. Add the following snippet:

```
<property>
<name>yarn.resource-types</name>
<value>yarn.io/gpu</value>
</property>
```

Affected Versions: CDH 6.2.0

Cloudera Issue: OPSAPS-49507

Error when executing Java classes from a CDH cluster running on Ubuntu 18

Using the hadoop command-line interface for executing Java classes that are not in the default package results in error messages similar to the following:

```
#hadoop org.apache.hadoop.conf.Configuration
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.0.p0.914039/bin/./lib/hadoop/libexec/hadoop-functions.sh:
line 2366: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_USER: bad substitution
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.x.p0.914039/bin/./lib/hadoop/libexec/hadoop-functions.sh:
line 2331: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_USER: bad substitution
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.x.p0.914039/bin/./lib/hadoop/libexec/hadoop-functions.sh:
line 2426: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_OPTS: bad substitution
```

This issue occurs only in CDH 6.2 clusters running on Ubuntu 18 and the error messages can be safely ignored.

Workaround: Run the java command directly using `hadoop classpath` to get the classpath. For example, instead of `hadoop org.apache.hadoop.conf.Configuration`, you can run `java -cp `hadoop classpath` org.apache.hadoop.conf.Configuration`.

Affected Versions: CDH 6.2.0

Fixed Versions: CDH 6.2.1

Apache Issue: [HADOOP-16167](#)

Hadoop LdapGroupsMapping does not support LDAPS for self-signed LDAP server

Hadoop LdapGroupsMapping does not work with LDAP over SSL (LDAPS) if the LDAP server certificate is self-signed. This use case is currently not supported even if Hadoop User Group Mapping LDAP TLS/SSL Enabled, Hadoop User Group Mapping LDAP TLS/SSL Truststore, and Hadoop User Group Mapping LDAP TLS/SSL Truststore Password are filled properly.

Affected Versions: CDH 5.x and 6.0.x versions

Fixed Versions: CDH 6.1.0

Apache Issue: [HADOOP-12862](#)

Cloudera Issue: CDH-37926

The Idempotent and Transactional Capabilities of Kafka are Incompatible with Sentry

The idempotent and transactional capabilities of Kafka are not compatible with Sentry. The issue is due to Sentry being unable to handle authorization policies for Kafka transactions. As a result, users cannot use Kafka transaction in combination with Sentry.

Workaround: Use the Sentry super user in applications where idempotent producing is a requirement or disable Sentry.

Affected Versions: CDK 4.0 and later, CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.3.0

Fixed Versions: CDH 6.2.1, 6.3.1

Apache Issue: N/A

Cloudera Issue: CDH-80606

WebHCat service cannot log

Any WebHCat commands referencing Hive are failing with error (main ERROR Cannot access RandomAccessFile java.io.IOException: Could not create directory /opt/cloudera/parcels/CDH-6.2.x-XXX/lib/hive/logs).

Affected Versions: 6.1.0, 6.1.1, 6.2.0

Fixed Versions: 6.2.1, 6.3.0

Apache Issue: N/A

Cloudera Issue: CDH-77160

Attempt to move table between encryption zones corrupts metadata

An attempt to move a table between different encryption zones fails as expected, but the remaining table is unusable and can only be deleted. This fix prevents metadata corruption.

Affected Versions: 5.15.1, 5.16.2, 6.1.1, 6.2.0

Fixed Versions: 5.16.3, 6.2.1, 6.3.0

Apache Issue: N/A

Cloudera Issue: CDH-77745

Upstream Issues Fixed

The following upstream issues are fixed in CDH 6.2.1:

Apache Accumulo

There are no notable fixed issues in this release.

Apache Avro

There are no notable fixed issues in this release.

Apache Crunch

There are no notable fixed issues in this release.

Apache Flume

There are no notable fixed issues in this release.

Apache Hadoop

The following issues are fixed in CDH 6.2.1:

- [HADOOP-16011](#) - OsSecureRandom very slow compared to other SecureRandom implementations
- [HADOOP-16018](#) - DistCp won't reassemble chunks when blocks per chunk > 0.
- [HADOOP-16167](#) - Fixed Hadoop shell script for Ubuntu 18.
- [HADOOP-16238](#) - Add the possibility to set SO_REUSEADDR in IPC Server Listener

HDFS

The following issues are fixed in CDH 6.2.1:

- [HDFS-10477](#) - Stop decommission a rack of DataNodes caused NameNode fail over to standby
- [HDFS-12781](#) - After Datanode down, In Namenode UI Datanode tab is throwing warning message.
- [HDFS-13101](#) - Yet another fsimage corruption related to snapshot
- [HDFS-13244](#) - Add stack, conf, metrics links to utilities dropdown in NN webUI
- [HDFS-13677](#) - Dynamic refresh Disk configuration results in overwriting VolumeMap
- [HDFS-14111](#) - hdfsOpenFile on HDFS causes unnecessary IO from file offset 0
- [HDFS-14314](#) - fullBlockReportLeaseld should be reset after registering to NN
- [HDFS-14359](#) - Inherited ACL permissions masked when parent directory does not exist
- [HDFS-14389](#) - getAclStatus returns incorrect permissions and owner when an iNodeAttributeProvider is configured
- [HDFS-14687](#) - Standby Namenode never come out of safemode when EC files are being written
- [HDFS-14746](#) - Trivial test code update after HDFS-14687

MapReduce 2

The following issue is fixed in CDH 6.2.1:

- [MAPREDUCE-7225](#) - Fix broken current folder expansion during MR job start

YARN

The following issues are fixed in CDH 6.2.1:

- [YARN-9552](#) - FairScheduler: NODE_UPDATE can cause NoSuchElementException
- [YARN-9667](#) - Use setbuf with line buffer to reduce fflush complexity in container-executor.

Apache HBase

The following issues are fixed in CDH 6.2.1:

- [HBASE-19893](#) - restore_snapshot is broken in master branch when region splits
- [HBASE-21736](#) - Remove the server from online servers before scheduling SCP for it in hbck
- [HBASE-21800](#) - RegionServer aborted due to NPE from MetaTableMetrics coprocessor
- [HBASE-21960](#) - RESTServletContainer not configured for REST Jetty server
- [HBASE-21978](#) - Should close AsyncRegistry if we fail to get cluster id when creating AsyncConnection
- [HBASE-21991](#) - Fix MetaMetrics issues - [Race condition, Faulty remove logic], few improvements
- [HBASE-22128](#) - Move namespace region then master crashed make deadlock
- [HBASE-22144](#) - Correct MultiRowRangeFilter to work with reverse scans
- [HBASE-22169](#) - Open region failed cause memory leak
- [HBASE-22200](#) - WALSplitter.hasRecoveredEdits should use same FS instance from WAL region dir
- [HBASE-22581](#) - User with "CREATE" permission can grant, but not revoke permissions on created table
- [HBASE-22615](#) - Make TestChoreService more robust to timing
- [HBASE-22617](#) - Recovered WAL directories not getting cleaned up
- [HBASE-22690](#) - Deprecate / Remove OfflineMetaRepair in hbase-2+
- [HBASE-22759](#) - Extended grant and revoke audit events with caller info - ADDENDUM

Apache Hive

The following issues are fixed in CDH 6.2.1:

- [HIVE-13278](#) - Avoid FileNotFoundException when map/reduce.xml is not available
- [HIVE-16811](#) - Estimate statistics in absence of stats

The corresponding Cloudera Issue is CDH-80169 (A query fails with IllegalArgumentException Size requested for unknown type: java.util.Collection). It is a Cloudera specific fix, a partial backport of HIVE-16811.

Hue

The following issues are fixed in CDH 6.2.1:

- [HUE-4327](#) - [editor] Turn off batch mode for query editors
- [HUE-8140](#) - [editor] Additional improvements to multi statement execution
- [HUE-8691](#) - [useradmin] Fix group sync fail to import member
- [HUE-8717](#) - [oozie] Fix Sqoop1 editor fail to execute
- [HUE-8720](#) - [importer] Fix importer with custom separator
- [HUE-8727](#) - [frontend] Prevent Chrome from autofilling user name in various input elements
- [HUE-8734](#) - [editor] Fix zero width column filter in the results
- [HUE-8746](#) - [pig] Add hcat support in the Pig Editor in Hue
- [HUE-8759](#) - [importer] Fix import to index, importing to hive instead
- [HUE-8802](#) - [assist] Fix js exception on assist index refresh
- [HUE-8829](#) - [core] Fix redirect stops at /hue/accounts/login
- [HUE-8860](#) - [beeswax] Truncate column size to 5000 if too large
- [HUE-8878](#) - [oozie] Fix Hive Document Action variable with prefilled value
- [HUE-8879](#) - [core] Fix ldaptest not allow space in user_filter
- [HUE-8880](#) - [oozie] Fix KeyError when execute coordinator
- [HUE-8922](#) - [frontend] Show dates and times in local format with timezone offset details
- [HUE-8933](#) - [editor] Make sure to clear any previous result when the execute call returns
- [HUE-8950](#) - [core] Fix error of saving copied document

Apache Impala

The following issues are fixed in CDH 6.2.1:

- [IMPALA-7800](#) - Impala now times out new connections after it reaches the maximum number of concurrent client connections. The limit is specified by the `--fe_service_threads` startup flag. The default value is 64 with which 64 queries can run simultaneously. Previously the connection attempts that could not be serviced were hanging infinitely.
- [IMPALA-7802](#) - Idle client connections are now closed to conserve front-end service threads.
- [IMPALA-8469](#) - Fixed the issue where Impala clusters with dedicated coordinators incorrectly rejected queries destined for memory pools with configured limits.
- [IMPALA-8549](#) - Added support for scanning DEFLATE text files.
- [IMPALA-8595](#) - Impala supports TLS v1.2 with the Python version 2.7.9 and older in `impala-shell`.
- [IMPALA-8673](#) - Added the `DEFAULT_HINTS_INSERT_STATEMENT` query option for setting the default hints for the `INSERT` statements when no optimizer hint was specified.

Authenticated user with access to active session or query id can hijack other Impala session or query

If an authenticated Impala user supplies a valid query id to Impala's HS2 and Beeswax interfaces, they can perform operations on other sessions or queries when normally they do not have privileges to do so.

Releases affected:

- CDH 5.16.x and lower
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0

Users affected: All Impala users of affected versions.

Date/time of detection: 21st May 2019

Severity (Low/Medium/High): 7.5 (High) ([CVSS 3.0: AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:N/A:N](#))

Impact: Neither the original issue or the fix affect the normal use of the system.

CVE: CVE-2019-10084

Immediate action required: There is no workaround, upgrade to a version of CDH containing the fix.

Addressed in release/refresh/patch: CDH 6.2.1 and higher versions

Apache Kafka

The following issue is fixed in CDH 6.2.1:

- [KAFKA-7697](#) - Process DelayedFetch without holding leaderIsrUpdateLock

Apache Kudu

The following issues are fixed in CDH 6.2.1:

- [KUDU-2807](#) - The system doesn't crash when a flush or a compaction overlaps with another compaction.
- [KUDU-2871](#) - (part 1): A temporary fix that pegs maximum TLS version to TLSv1.2.

Apache Oozie

The following issues are fixed in CDH 6.2.1:

- [OOZIE-3365](#) - Workflow and coordinator action status remain as RUNNING after rerun.
- [OOZIE-3397](#) - Improve logging in NotificationXCommand.
- [OOZIE-3478](#) - Oozie needs execute permission on the submitting user's home directory.

Apache Parquet

There are no notable fixed issues in this release.

Apache Pig

There are no notable fixed issues in this release.

Cloudera Search

There are no notable fixed issues in this release.

Apache Sentry

The following issues are fixed in CDH 6.2.1:

- [SENTRY-2276](#) - Sentry-Kafka integration does not support Kafka's Alter/DescribeConfigs and IdempotentWrite operations
- [SENTRY-2511](#) - Debug level logging on HMSPaths significantly affects performance
- [SENTRY-2528](#) - Format exception when fetching a full snapshot

Apache Spark

The following issues are fixed in CDH 6.2.1:

- [SPARK-25139](#) - [SPARK-18406][CORE][2.4] Avoid NonFatals to kill the Executor in PythonRunner
- [SPARK-25429](#) - [SQL] Use Set instead of Array to improve lookup performance
- [SPARK-26003](#) - Improve SQLAppStatusListener.aggregateMetrics performance
- [SPARK-26089](#) - [CORE] Handle corruption in large shuffle blocks
- [SPARK-26349](#) - [PYSPARK] Forbid insecure py4j gateways
- [SPARK-27094](#) - [YARN] Work around RackResolver swallowing thread interrupt.
- [SPARK-27112](#) - [CORE] : Create a resource ordering between threads to resolve the deadlocks encountered ...
- [SPARK-28150](#) - [CORE] Log in user before getting delegation tokens.
- [SPARK-28335](#) - [DSTREAMS][TEST] DirectKafkaStreamSuite wait for Kafka async commit

Apache Sqoop

There are no notable fixed issues in this release.

Apache Zookeeper

The following issues are fixed in CDH 6.2.1:

- [ZOOKEEPER-1392](#) - Request READ or ADMIN permission for getAcl()
- [ZOOKEEPER-2141](#) - ACL cache in DataTree never removes entries

Unsupported Features in CDH 6.2.1

This page lists the unsupported features in CDH 6.2.x. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.2.0](#) on page 872.

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 726
- [YARN Unsupported Features](#) on page 727

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.x:

- ACLs for the NFS gateway ([HADOOP-11004](#))
- Aliyun Cloud Connector ([HADOOP-12756](#))
- Allow HDFS block replicas to be provided by an external storage system ([HDFS-9806](#))
- Consistent standby Serving reads ([HDFS-12943](#))
- HDFS Router Based Federation ([HDFS-10467](#))
- More than two NameNodes ([HDFS-6440](#))
- NameNode Federation ([HDFS-1052](#))

- Openstack Swift ([HADOOP-8545](#))
- SFTP FileSystem ([HADOOP-5732](#))
- Storage policy satisfier ([HDFS-10285](#))
- Upgrade Domain ([HDFS-7541](#))

YARN Unsupported Features

The following YARN features are not supported in CDH 6.2.x:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers
- Distributed Scheduling
- Docker on YARN (DockerContainerExecutor)
- Native Services
- New Aggregated Log File Format
- Node Labels
- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Estimator Service
- Resource Profiles
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.2.x:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction
- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation
- Client tarball
- Rolling upgrade from CDH 5 HBase versions

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.2.x:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution

- Hive Metastore - Derby
- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))
- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka features are not supported in CDH 6.2.x:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.
- Idempotent and transactional capabilities in the producer are currently an unsupported beta feature given their maturity and complexity. This feature will be supported in a future release.
- Kafka Connect is included in CDH 6.2.x, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- Kafka Streams is included in CDH 6.2.x, but is not supported. Instead, use Spark and Spark Streaming have a fully functional ETL/stream processing pipeline. See [Using Kafka with Apache Spark Streaming for Stream Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.2.x, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.2.x:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.2.x:

- Pig on Tez is not supported in CDH 6.1.x ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.2.x:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.2.x:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

([Known Issue](#))

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.x, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.2.x:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)
- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is supported, but the following features of it *are not*:
 - Continuous processing, which is still experimental, is not supported
 - Stream static joins with HBase have not been tested and therefore are not supported
- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.2.x:

- `import-mainframe`

Incompatible Changes in CDH 6.2.1

**Important:**

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.2.1, grouped by component:

Apache Accumulo

CDH 6.2.1 introduces no new incompatible changes for Apache Accumulo.

Apache Avro

API Changes

One method was removed in CDH 6.0.0:

```
GenericData.toString (Object datum, StringBuilder buffer)
```

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires GenericEnumSymbol - likely to break current Generic API users that often have String or Java Enum for these fields
- [AVRO-1502](#): Avro Objects now Serializable - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be HTrace
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.
- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).
- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. The only additional configuration required to use HBase2Sink is to replace the component name in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

`com.google.common.collect.ImmutableMap`

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

- [HDFS Incompatible Changes](#) on page 731
- [MapReduce](#) on page 732
- [YARN](#) on page 732

HDFS Incompatible Changes

CDH 6.2.0 introduces no new incompatible changes for HDFS.

CDH 6.1.0 introduces no new incompatible changes for HDFS.

CDH 6.0.1 introduces no new incompatible changes for HDFS.

CDH 6.0.0, introduces the following incompatible changes for HDFS:

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.
- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSClient#mkdirs` and `DFSClient#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.

- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.
 - All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.
- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0
- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.
- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0
 - asm from 3.2 to 5.0.4

MapReduce

CDH 6.2.0 introduces no new incompatible changes for MapReduce.

CDH 6.0.0, introduces the following incompatible changes:

- Support for MapReduce v1 has been dropped from CDH 6.0.0.
- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

CDH 6.2.0 introduces no new incompatible changes for YARN.

CDH 6.1.0 introduces no new incompatible changes for YARN.

CDH 6.0.1 introduces no new incompatible changes for YARN.

CDH 6.0.0 introduces no new incompatible changes for YARN.

Apache HBase

CDH 6.2.x contains the following downstream HBase incompatible change:

`hbase.security.authorization`

The default value for `hbase.security.authorization` has been changed from `true` to `false`. Secured clusters should make sure to explicitly set it to `true` in XML configuration file before upgrading to one of these versions ([HBASE-19483](#)). True as the default value of `hbase.security.authorization` was changed because not all clusters need authorization. (History: [HBASE-13275](#)) Rather, only the clusters which need authorization should set this configuration as `true`.

Incompatible Changes

For more information about upstream incompatible changes, see the Apache Reference Guide [Incompatible Changes](#) and [Upgrade Paths](#).

CDH 6.1.0 introduces the following incompatible changes for HBase:

- [HBASE-20270](#): Error triggered command help is no longer available.
- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.

CDH 6.0.x introduces the following upstream HBase incompatible changes:

- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.
- Public interface API changes:
 - [HBASE-15607](#): Admin
 - [HBASE-19112](#), [HBASE-18945](#): Cell
 - Region, Store, HBaseTestingUtility
- [HBASE-18792](#): hbase-2 needs to defend against hbck operations
- [HBASE-15982](#): Interface ReplicationEndpoint extends Guava's Service.
- [HBASE-18995](#): Split CellUtil into public CellUtil and PrivateCellUtil for Internal use only.
- [HBASE-19179](#): Purged the hbase-prefix-tree module and all references from the code base.
- [HBASE-17595](#): Add partial result support for small/limited scan; Now small scan and limited scan could also return partial results.
- [HBASE-16765](#): New default split policy, SteppingSplitPolicy.
- [HBASE-17442](#): Move most of the replication related classes from hbase-client to hbase-replication package.
- [HBASE-16196](#): The bundled JRuby 1.6.8 has been updated to version 9.1.9.0.
- [HBASE-18811](#): Filters have been moved from Public to LimitedPrivate.
- [HBASE-18697](#): Replaced hbase-shaded-server jar with hbase-shaded-mapreduce jar.
- [HBASE-18640](#): Moved mapreduce related classes out of hbase-server into separate hbase-mapreduce jar .
- [HBASE-19128](#): Distributed Log Replay feature has been removed.
- [HBASE-19176](#): Hbase-native-client has been removed.
- [HBASE-17472](#): Changed semantics of granting new permissions. Earlier, new grants would override previous permissions, but now, the new and existing permissions get merged.
- [HBASE-18374](#): Previous "mutate" latency metrics has been renamed to "put" metrics.
- [HBASE-15740](#): Removed Replication metric source.shippedKBs in favor of source.shippedBytes.
- [HBASE-13849](#): Removed restore and clone snapshot from the WebUI.
- [HBASE-13252](#): The concept of managed connections in HBase (deprecated before) has now been extinguished completely, and now all callers are responsible for managing the lifecycle of connections they acquire.
- [HBASE-14045](#): Bumped thrift version to 0.9.2.
- [HBASE-5401](#): Changes to number of tasks PE runs when clients are mapreduce. Now tasks == client count. Previous we hardcoded ten tasks per client instance.

Changed Behavior

CDH 6.1.x contains the following HBase behavior changes:

- [HBASE-14350](#): Assignment Manager v2 - Split/Merge have moved to the Master; it runs them now. Hooks around Split/Merge are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-18271](#): Moved to internal shaded netty.
- [HBASE-17343](#): Default MemStore to be CompactingMemStore instead of DefaultMemStore. In-memory compaction of CompactingMemStore demonstrated sizable improvement in HBase's write amplification and read/write performance.
- [HBASE-19092](#): Make Tag IA.LimitedPrivate and expose for CPs.
- [HBASE-18137](#): Replication gets stuck for empty WALs.
- [HBASE-17513](#): Thrift Server 1 uses different QOP settings than RPC and Thrift Server 2 and can easily be misconfigured so there is no encryption when the operator expects it.

- [HBASE-16868](#): Add a `replicate_all` flag to replication peer config. The default value is true, which means all user tables (`REPLICATION_SCOPE != 0`) will be replicated to peer cluster.
- [HBASE-19341](#): Ensure Coprocessors can abort a server.
- [HBASE-18469](#): Correct RegionServer metric of `totalRequestCount`.
- [HBASE-17125](#): Marked `Scan` and `Get`'s `setMaxVersions()` and `setMaxVersions(int)` as deprecated. They are easy to misunderstand with column family's max versions, so use `readAllVersions()` and `readVersions(int)` instead.
- [HBASE-16567](#): Core is now up on protobuf 3.1.0 (Coprocessor Endpoints and REST are still on protobuf 2.5.0).
- [HBASE-14004](#): Fix inconsistency between Memstore and WAL which may result in data in remote cluster that is not in the origin (Replication).
- [HBASE-18786](#): `FileNotFoundException` opening a `StoreFile` in a primary replica now causes a `RegionServer` to crash out where before it would be ignored (or optionally handled via `close/reopen`).
- [HBASE-17956](#): Raw scans will also read TTL expired cells.
- [HBASE-17017](#): Removed per-region latency histogram metrics.
- [HBASE-19483](#): Added ACL checks to `RSGroup` commands - On a secure cluster, only users with ADMIN rights will be able to execute `RSGroup` commands.
- [HBASE-19358](#): Added ACL checks to `RSGroup` commands ([HBASE-19483](#)): On a secure cluster, only users with ADMIN rights will be able to execute `RSGroup` commands. Improved stability of splitting log when do failover.
- [HBASE-18883](#): Updated our Curator version to 4.0 - Users who experience classpath issues due to version conflicts are recommended to use either the `hbase-shaded-client` or `hbase-shaded-mapreduce` artifacts.
- [HBASE-16388](#): Prevent client threads being blocked by only one slow region server - Added a new configuration to limit the max number of concurrent request to one region server.
- [HBASE-15212](#): New configuration to limit RPC request size to protect the server against very large incoming RPC requests. All requests larger than this size will be immediately rejected before allocating any resources.
- [HBASE-15968](#): This issue resolved two long-term issues in HBase: 1) Puts may be masked by a delete before them, and 2) Major compactions change query results. Offers a new behavior to fix this issue with a little performance reduction. Disabled by default. See the issue for details and caveats.
- [HBASE-13701](#): `SecureBulkLoadEndpoint` has been integrated into HBase core as default bulk load mechanism. It is no longer needed to install it as a coprocessor endpoint.
- [HBASE-9774](#): HBase native metrics and metric collection for coprocessors.
- [HBASE-18294](#): Reduce global heap pressure: flush based on heap occupancy.

Apache Hive/Hive on Spark/HCatalog

Apache Hive

The following changes are introduced to Hive in CDH 6.0.0, and are not backwards compatible:

- [UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting](#) on page 1248
- [Support for UNION DISTINCT](#) on page 1249
- [OFFLINE and NO_DROP Options Removed from Table and Partition DDL](#) on page 1250
- [DESCRIBE Query Syntax Change](#) on page 1250
- [CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names](#) on page 1250
- [Reserved and Non-Reserved Keyword Changes in HiveQL](#) on page 1250
- [Apache Hive API Changes in CDH 6.0.0](#) on page 1252
- [Apache Hive Configuration Changes in CDH 6.0.0](#) on page 1253
- [HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes](#) on page 1256
- [Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column](#) on page 1256
- [Hive Logging Framework Switched to SLF4J/Log4j 2](#) on page 1256
- [Deprecated Parquet Java Classes Removed from Hive](#) on page 1256
- [Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms](#) on page 1257
- [S3N Connector Is Removed from CDH 6.0](#) on page 1257
- [Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request](#) on page 1257

- [Support Added for Escaping Carriage Returns and New Line Characters for Text Files \(LazySimpleSerDe\)](#) on page 1258
- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1258

Changing Table File Format from ORC with the ALTER TABLE Command Not Supported in CDH 6

Changing the table file format from ORC to another file format with the ALTER TABLE command is not supported in CDH 6 (it returns an error).

UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting

Prior to this change, Hive performed implicit casts when data types from different type groups were specified in queries that use UNION ALL. For example, before CDH 6.0, if you had the two following tables:

Table "one"

```
+-----+-----+-----+
| one.col_1 | one.col_2 | one.col_3 |
+-----+-----+-----+
| 21        | hello_all | b         |
+-----+-----+-----+
```

Where col_1 datatype is int, col_2 datatype is string, and col_3 datatype is char(1).

Table "two"

```
+-----+-----+-----+
| two.col_4 | two.col_5 | two.col_6 |
+-----+-----+-----+
| 75.0      | abcde    | 45        |
+-----+-----+-----+
```

Where col_4 datatype is double, col_5 datatype is varchar(5), and col_6 datatype is int.

And you ran the following UNION ALL query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS
col_3 FROM two;
```

You received the following result set:

```
+-----+-----+-----+
| _u1.col_1 | _u1.col_2 | _u1.col_3 |
+-----+-----+-----+
| 75.0      | abcde    | 4         |
| 21.0      | hello    | b         |
+-----+-----+-----+
```

Note that this statement implicitly casts the values from table one with the following errors resulting in data loss:

- one.col_1 is cast to a double datatype
- one.col_2 is cast to a varchar(5) datatype, which truncates the original value from hello_all to hello
- one.col_3 is cast to a char(1) datatype, which truncates the original value from 45 to 4

In CDH 6.0, no implicit cast is performed across different type groups. For example, STRING, CHAR, and VARCHAR are in one type group, and INT, BIGINT, and DECIMAL are in another type group, and so on. So, in CDH 6.0 and later, the above query that uses UNION ALL, returns an exception for the columns that contain datatypes that are not part of

a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**

- `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
- The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.

- **Behavior in CDH 6:**

- `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
- The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:

- `ENABLE | DISABLE NO_DROP [CASCADE]`
- `ENABLE | DISABLE OFFLINE`
- `ALTER TABLE ... IGNORE PROTECTION`

- The following support has also been removed from the `HiveMetastoreClient` class:

The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, `data`). *Non-reserved keywords* can be used as table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|---------|------------|------------|----------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |
| START | | | |

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|----------|----------|---------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |
| BOOLEAN | BOTH | BY | CREATE |
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |

| | | | |
|-----------|----------|-----------|-----------|
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|--------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLTIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|---------------|---------|-------------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |
| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252

- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a `CLOB` data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like `"="`, `"<>"`, and `"!="` might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with `CLOB` data types. There is no equivalent `"<>"` operator that is compatible with `CLOB`. So there is no equivalent operator for the above example that uses the `"<>"` inequality operator. The equivalent for `"="` is the `LIKE` operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253
- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(hive.server2.enable.impersonation\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.
3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned table but do not filter on the partition column. | <code>false</code> |
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)
- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (`hive.server2.enable.impersonation`) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`
 - **Description:** Sets the file format in which a query's intermediate results are stored.
3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:

```
org.apache.hive.service.cli.thrift
```

To the following *new* namespace:

```
org.apache.hive.service.rpc.thrift
```
- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale

of 5, the value returned for zero was returned as 0. Now, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the `INPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat` and set the `OUTPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`
- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanUp(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|--|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |
| REF_GENERATION | Specifies how values in the <code>SELF_REFERENCING_COL_NAME</code> column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the SerDe property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, `'r'` or `'n'` cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the `LazySerDeParameters` class. For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

There are no incompatible changes in this release.

Apache Impala

Port Change for SHUTDOWN Command

The `SHUTDOWN` command for shutting down a remote server used the backend port in CDH 6.1. Starting in CDH 6.2, the command uses the KRPC port, e.g. `:shutdown('host100:27000')`.

Apache Kafka

Incompatible Changes Introduced in CDH 6.2.1

CDH 6.2.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.2.0



Warning: Kafka in CDH 6.2.0 is based on Apache Kafka 2.1.0, which contains a change to the internal schema used to store consumer offsets. As a result of this change, downgrading Kafka to a version lower than CDH 6.2.0 is **NOT** possible once Kafka has been upgraded to CDH 6.2.0 or higher.

Default Behaviour Changes

Kafka CDH 6.2.0. Introduces the following default behaviour changes:

- Unclean leader election is automatically enabled by the controller when `unclean.leader.election.enable` config is dynamically updated by using per-topic config override.
- Diagnostic data bundles collected by Cloudera Manager from now on include information on Kafka topics. The bundle includes the information exposed by the following two commands:

```
- kafka-topics --describe
```

```
- kafka-topics --list
```

Incompatible Changes Introduced in CDH 6.1.1

CDH 6.1.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.1.0

Scala-based Client API Removed

Scala-based clients were deprecated in a previous release and are removed as of CDH 6.1.0.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are effected:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Default Behaviour Change

[KAFKA-7050](#): The default value for `request.timeout.ms` is decreased to 30 seconds. In addition, a new logic is added that makes the `JoinGroup` requests ignore this timeout.

Incompatible Changes Introduced in CDH 6.0.1

CDH 6.0.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.0.0

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`

- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see the previous entry). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`
- `kafka.tools.ExportZkOffset`
- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- `GroupCoordinatorNotAvailableException`
- `GroupLoadInProgressException`
- `NotCoordinatorForGroupException`
- `kafka.common.KafkaStorageException`

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Apache Kudu

There are no incompatible changes in this release.

Apache Oozie

There are no incompatible changes in this release.

Apache Parquet

Packages and Group ID Renamed

As a part of the Apache incubation process, all Parquet packages and the project's group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|----------------------------|
| Java Package Names | parquet.* | org.apache.parquet.* |
| Group ID | com.twitter | org.apache.parquet |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update *.java files:

| Before | After |
|--------------------------------|---|
| <code>import parquet.*;</code> | <code>import org.apache.parquet.*;</code> |

Update pom.xml:

| Before | After |
|---|--|
| <pre><dependency> <groupId> com.twitter </groupId> <version> \${parquet.version} </version> </dependency></pre> | <pre><dependency> <groupId> org.apache.parquet </groupId> <version> \${parquet.version} </version> </dependency></pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestedSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestedSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Pig

The following change is introduced to Pig in CDH 6.0 and is not a backwards compatible change. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0 JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 46: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|---|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |
| VAR (stats) | Generates the variance of a set of values. | variance | None |
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 749. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 749. |
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way to filter using a logical disjunction over many values. | IN | None |

For more information about using Hive UDFs, see

https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 47: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|-----------------------------|---|---|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |
| Examples: | <pre>register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); }</pre> | <pre>define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc));</pre> |

Although DataFu `StreamingQuantile` and `StreamingMedian` might appear to match Hive's `percentile_approx` function, Pig cannot consume `percentile_approx`.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 48: DataFu Functions with No Hive UDF Equivalent

| | | |
|---------------------------------------|--|--------------------------------------|
| <code>AppendToBag (bags)</code> | <code>AssertUDF (util)</code> | <code>BagConcat (bags)</code> |
| <code>BagGroup (bags)</code> | <code>BagLeftOuterJoin (bags)</code> | <code>BagSplit (bags)</code> |
| <code>BoolToInt (util)</code> | <code>CountEach (bags)</code> | <code>DistinctBy (bags)</code> |
| <code>EmptyBagToNull (bags)</code> | <code>EmptyBagToNullFields (bags)</code> | <code>Enumerate (bags)</code> |
| <code>FirstTupleFromBag (bags)</code> | <code>HaversineDistInMiles (geo)</code> | <code>IntToBool (util)</code> |
| <code>MarkovPairs</code> | <code>NullToEmptyBag (bags)</code> | <code>PageRank (linkanalysis)</code> |
| <code>PrependToBag (bags)</code> | <code>ReservoirSample (sampling)*</code> | <code>ReverseEnumerate (bags)</code> |
| <code>SampleByKey (sampling)*</code> | <code>SessionCount (sessions)</code> | <code>Sessionize (sessions)</code> |

| | | |
|----------------------------|-----------------------|--------------------------------|
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with TABLESAMPLE in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

The following changes are introduced in CDH 6.1

In CDH 6.1 Cloudera Search is rebased on Apache Solr 7.4.

Deprecations

- Enabling/disabling `autoAddReplicas` cluster-wide with the API is deprecated. Use `suspend/resume` trigger APIs with `name=".auto_add_replicas"` instead.
- In the `ReplicationHandler`, the `master.commitReserveDuration` sub-element is deprecated. Configure a direct `commitReserveDuration` element instead for use in all modes (leader, follower, cloud).

Removals

- The old Leader-In-Recovery implementation (implemented in Solr 4.9) has been removed and replaced. Solr supports rolling upgrades from old 7.x versions of Solr to future 7.x releases until the last release of the 7.x major version. This means that to upgrade to Solr 8, you will have to be on Solr 7.3 or higher.
- The throttling mechanism used to limit the rate of processed autoscaling events has been removed. This deprecates the `actionThrottlePeriodSeconds` setting in the `set-properties` command of Autoscaling API. Use the `triggerCooldownPeriodSeconds` parameter to pause event processing.
- The `RunExecutableListener` event listener was removed for security reasons. If you want to listen to events caused by updates and commits, or you want to optimize, write your own listener as native Java class as part of a Solr plugin.

For more information see the [Apache Solr 7.4 Release Notes](#).

The following changes are introduced in CDH 6.0

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.
- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

Apache Sentry contains the following incompatible change in CDH 6.0.0:

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.
- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.
- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.
Since compile-time type-safety in Python and R is not a language feature, the concept of `Dataset` does not apply to these languages' APIs. Instead, `DataFrame` remains the primary programming abstraction.
- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

CDH 6.2.0 introduces no new incompatible changes for Apache Sqoop.

The following changes are introduced in CDH 6.0, and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0. Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a CHAR or VARCHAR column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to `true` to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with `hcatalog` jobs or when `hive import` with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile
format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with `--hcatalog-table <HIVE_VIEW>`

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the `--hcatalog-table` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table"
--hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using `EscapeUtils`. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySQL after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of `--input-null-string` and `--input-null-non-string` options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using `--direct` connector and a MySQL database

The MySQL direct connector does not support the `--null-string`, `--null-non-string`, `--input-null-string`, and `--input-null-non-string` options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

There are no incompatible changes in this release.

Timezone Names Unsupported in Impala in CDH 6.2.1

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|----------------------|-------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |

| | |
|--|--------------------------------|
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |

| | |
|------------------------------|----------------------|
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |

| | |
|-------------------------------|------------------------------|
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |
| FJST | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |

| | |
|--|-------------------|
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |

| | |
|-------------------------------|-------------------|
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |

| | |
|--------------------------------|----------------------|
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |

| | |
|----------------------------|----------------------|
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |

| | |
|---------------------------------|----------------------|
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymsk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |

| | |
|-----------------------------|------------------------|
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |
| Srednekolymsk Time | Asia/Srednekolymsk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |

| | |
|--------------------------|--------------------|
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |

| | |
|-------------------------------|--------------------|
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.2.1

The following sections describe the known issues in CDH 6.2.1, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-1000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.



Important: If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can workaround the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|---------------------------------|--|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|--------------|----------------------------------|---|
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.
5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
10. Click **Save Changes**.
11. Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.
10. Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|------------------|--|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |

| Service | Settable Java Configuration Option |
|-----------------------|---|
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

(1) Ensure that the kernel is up to date.

- **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
- **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
- **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

There are no notable known issues in this release of Apache Accumulo.

Apache Crunch Known Issues



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

Apache Flume Known Issues

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to `false`.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x
- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

Error when executing Java classes from a CDH cluster running on Ubuntu 18

Using the hadoop command-line interface for executing Java classes that are not in the default package results in error messages similar to the following:

```
#hadoop org.apache.hadoop.conf.Configuration
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.0.p0.914039/bin/./lib/hadoop/libexec//hadoop-functions.sh:
line 2366: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_USER: bad substitution
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.x.p0.914039/bin/./lib/hadoop/libexec//hadoop-functions.sh:
line 2331: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_USER: bad substitution
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.x.p0.914039/bin/./lib/hadoop/libexec//hadoop-functions.sh:
line 2426: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_OPTS: bad substitution
```

This issue occurs only in CDH 6.2 clusters running on Ubuntu 18 and the error messages can be safely ignored.

Workaround: Run the java command directly using `hadoop classpath` to get the classpath. For example, instead of `hadoop org.apache.hadoop.conf.Configuration`, you can run `java -cp `hadoop classpath` org.apache.hadoop.conf.Configuration`.

Affected Versions: CDH 6.2.0

Fixed Versions: CDH 6.2.1

Apache Issue: [HADOOP-16167](#)

HDFS

Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH
- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.

- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

Potential HDFS data loss due to snapshot usage

A fix to HDFS snapshot functionality through HDFS-13101 caused a regression in the affected product releases. Because of incorrect reference counting calculation in the NameNode, a snapshot delete operation can result in critical data loss in the Filesystem.

Releases affected:

- CDH 6.2.1, 6.3.1 and 6.3.2
- CDP Data Center 7.0.x, CDP Data Center 7.1.1, CDP Data Center 7.1.2
- HDP or CDH customers with the patch installed for HDFS-13101 and/or HDFS-15012

Users affected:

- Any clusters with HDFS Snapshots enabled.
- Any clusters with BDR based replication on HDFS directories.

Impact: Because of incorrect reference counting calculation in the NameNode, a snapshot delete operation can result in critical data loss in the Filesystem.

Immediate action required:

- Please raise a support case referencing TSB 2020-432 to request a new patch for your impacted product version.
- If you need help in determining the installed product version or patch level, please raise a support case.
- **Workaround:**
 - Avoid using snapshots or BDR functionality.
 - Cloudera BDR uses snapshots feature inherently. Therefore, if either BDR or HDFS snapshot feature is being used, please request for a patch as stated above.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-432: Potential HDFS data loss due to snapshot usage](#)

HDFS Snapshot corruption

A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Products affected: HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0 - 6.2.1, 6.3.0, 6.3.1, 6.3.2

Users affected: Any clusters with HDFS Snapshots enabled

Impact: A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Standby NameNode detects the inconsistent snapshot data structure and shuts itself down. To recover from this situation, the fsimage must be repaired and put back into both NameNodes' fsimage directory for the Standby NameNode to start normally. The Active NameNode stays up. However no fsimage checkpoint is performed because the Standby NameNode is down.

This problem can also prevent snapshots from being deleted or files within snapshots being listed. The following is an example of a typical error:

```
hdfs dfs -deleteSnapshot /path snapshot_123
deleteSnapshot: java.lang.IllegalStateException
```

The recovery of the corrupt fsimage can result in the loss of snapshots.

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: Alternatively, avoid using snapshots. Cloudera BDR uses snapshots automatically when the relevant directories are snapshottable. Hence, we strongly recommend avoiding the upgrade to the affected releases if you are using BDR. For information and instructions, see [Enabling and Disabling HDFS Snapshots](#).

Addressed in release/refresh/patch: CDH 6.3.3

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-390: HDFS Snapshot corruption](#)

OIV ReverseXML processor fails

The HDFS OIV ReverseXML processor fails if the XML file contains escaped characters.

Affected Versions: CDH 6.x

Apache Issue: [HDFS-12828](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:

- Install CDH using Cloudera Manager; *or*
- Start the NFS gateway as root; *or*
- [Start the NFS gateway without using packages](#); *or*
- You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the portmap.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to `777` on `.snapshot` directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

Permissions for `dfs.namenode.name.dir` incorrectly set

Hadoop daemons should set permissions for the `dfs.namenode.name.dir` (or `dfs.name.dir`) directories to `drwx-----` (700), but in fact these permissions are set to the file-system default, usually `drwxr-xr-x` (755).

Workaround: Use `chmod` to set permissions to 700.

Affected Versions: All CDH versions

Apache Issue: [HDFS-2470](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
```

```
java.lang.NullPointerException at  
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler
- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

NodeManager fails because of the changed default location of container executor binary

The default location of container-executor binary and .cfg files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`. Because of this change, if you did not have the mount options `-noexec` and `-nosuid` set on `/opt`, the NodeManager can fail to start up as these options are set on `/var`.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the `-noexec` and `-nosuid` mount options on `/var` or change the container-executor binary and .cdf path using the `CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR` environment variable.

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, Enable Fair Scheduler Continuous Scheduler is turned off by default.

Workaround: Turn off `Enable Fair Scheduler Continuous Scheduling` in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on `Fair Scheduler Assign Multiple Tasks`.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated `mapred-site.xml` that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

GPU or Custom Resource Type User Jobs can Fail After Recovery

When a GPU or other custom resource goes offline when it has containers that use that particular resource and they have not reached completion, after the restart the application will start to recover. However, if the resource is not available anymore the job that uses that resource will fail.

Workaround: N/A

Affected Versions: CDH 6.2.0, CDH 6.3.0

Cloudera Issue: CDH-77649

NodeManager Fails if GPU Use Is Enabled without any Configured GPU

When **Enable GPU Usage** is enabled for a NodeManager and there is no properly configured GPU device in that node, the NodeManager will not start.

Workaround: Disable **Enable GPU Usage** for that NodeManager in Cloudera Manager.

Affected Versions: CDH 6.2.0, CDH 6.3.0

Apache Issue: [YARN-9217](#)

Apache HBase Known Issues

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.
2. Find the **Enable Audit Collection** property and clear it.
3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x
- HDP 3.1.5
- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.

- If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:
 - Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
 - At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x
- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for `hbase-site.xml` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom hbase-site →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each `RegionServer` under the `RegionServer/Server JMX` metrics endpoint. When short circuit reads are not enabled, this metric will be zero. When short circuit reads are enabled and the data locality for this `RegionServer` is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Default limits for `PressureAwareCompactionThroughputController` are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP
- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4
- **Workaround:**
 - Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
 - An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a `DataNode` can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different `DataNodes`, meaning that there will be one `RegionServer` per `DataNode` per HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase`

to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

IntegrationTestReplication fails if replication does not finish before the verify phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

ExportSnapshot or DistCp operations may fail on the Amazon s3a:// protocol

`ExportSnapshot` or `DistCP` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO later. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

Export to Azure Blob Storage (the wasb:// or wasbs:// protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController postOperation problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive/HCatalog/Hive on Spark/Hive Metastore Known Issues

This topic contains:

- [Hive Known Issues](#)
- [HCatalog Known Issues](#)
- [Hive on Spark Known Issues](#)
- [Hive Metastore Known Issues](#) on page 782

Hive Known Issues

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Query with an empty WHERE clause problematic if vectorization is off

Specific WHERE clauses cause problems if vectorization is off. For example,

```
SELECT COUNT (DISTINCT cint) FROM alltypesorc WHERE cstring1;
SELECT 1 WHERE 1;
```

If vectorization is turned on and no rules turn off the vectorization, queries run as expected.

Workaround: Rewrite queries with casts or equals.

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-15408](#)

Cloudera Issue: CDH-81649

Query with DISTINCT can fail if vectorization is on

A query can fail when vectorization is turned on, the query contains DISTINCT, and other rules do not turn off the vectorization. A query-specific error message appears, for example:

```
Error: Error while compiling statement: FAILED: SemanticException
org.apache.hadoop.hive.ql.metadata.HiveException: The column KEY._col2:0._col0 is not
in the vectorization context column map {KEY._col0=0, KEY._col1=1, KEY._col2=2}.
(state=42000,code=40000)
```

Workaround: Turn off vectorization for such queries as follows:

```
set hive.vectorized.execution.enabled=false;
```

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-19032](#)

Cloudera Issue: CDH-81341

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: Arithmetic exception [divide by] 0. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the SELECT clause on large values in columns with the data type of BIGINT might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are BIGINT data types in the SELECT clause of the query, incorrect results might be returned. Comparison operators include `==`, `!=`, `<`, `<=`, `>`, and `>=`. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference of values in such columns is out of range for a LONG (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 - (-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a LONG (64-bit) data type can hold.

Workaround: Use a `DECIMAL` type instead of `BIGINT` for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the `ORDER BY` clause is not supported for `SELECT *` queries

When column positions are specified in `ORDER BY` clauses, they are not honored for `SELECT *` queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

`ALTER PARTITION ... SET LOCATION` does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use `ALTER PARTITION ... SET LOCATION` on S3 or between S3 and HDFS. The rest of the `ALTER PARTITION` commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Commands run against an Oracle-backed metastore might fail

Commands run against an Oracle-backed Metastore fail with error:

```
javax.jdo.JDODataStoreException Incompatible data type for column TBLS.VIEW_EXPANDED_TEXT
: was CLOB (datastore),
but type expected was LONGVARCHAR (metadata). Please check that the type in the datastore
and the type specified in the MetaData are consistent.
```

This error might occur if the metastore is run on top of an Oracle database with the configuration property `datanucleus.validateColumns` set to `true`.

Workaround: Set `datanucleus.validateColumns=false` in the `hive-site.xml` configuration file.

Affected Versions: All CDH versions

Cannot create archive partitions with external HAR (Hadoop Archive) tables

`ALTER TABLE ... ARCHIVE PARTITION` is not supported on external tables.

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types `Server` and `URI` are not supported in `"SHOW GRANT ROLE roleName on OBJECT objectName"` statements

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

Logging differences create Supportability Issues

In the event you need Apache Hive support from Cloudera, the availability of logs is critical. Some CDH releases do not enable log4j2 logging for Hive by default. Because of this, logs are not generated. Furthermore, the specified CDH releases are not configured to remove old log files to make room for new ones. This can cause the new logs to be lost. When Hive logs are missing, Support cannot troubleshoot Hive problems efficiently.

Components affected: Hive

Products affected: Hive

Releases affected:

- CDH 6.1
- CDH 6.2
- CDH 6.3

Users affected: Hive users

Severity: Medium

Impact: The absence of Hive log files causes delays in troubleshooting Hive problems.

Action required: Manually configure log4j2 logging, and delete old log files to make room for new ones.

1. Open Cloudera Manager.
2. Select **Clusters > HIVE**.
3. Click the **Configuration** tab.
4. In the Search field, enter Hive Metastore Server Logging Advanced Configuration Snippet (Safety Valve).
5. Add the following XML to the field (or switch to Editor mode, and enter each property and its value in the fields provided).

```
<property>
  <name>rootLogger.appenderRefs</name>
  <value>root, console, DRFA, PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.name</name>
  <value>org.apache.hadoop.hive.ql.log.PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.level</name>
  <value>DEBUG</value>
</property>
<property>
  <name>appender.DRFA.filePattern</name>
  <value>${log.dir}/${log.file}.%i</value>
</property>
<property>
  <name>appender.DRFA.strategy.fileIndex</name>
  <value>min</value>
</property>
```

6. In the Search field, enter HiveServer2 Logging Advanced Configuration Snippet (Safety Valve).
7. Add the XML properties from step 5.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-384: Logging differences in CDH 6 create Supportability Issues](#)

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

Hive on Spark (HoS) Known Issues

A query fails with `IllegalArgumentException` Size requested for unknown type: `java.util.Collection`

An example of a query that fails due to this issue is:

```
WITH t2 AS
(SELECT array(1,2) AS c1
UNION ALL SELECT array(2,3) AS c1)
SELECT collect_list(c1)
FROM t2
```

Workaround: Create a table to store the array data.

Affected Versions: 6.3.x, 6.2.x, 6.1.x

Cloudera Issue: CDH-80169

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form "client.RpcRetryingCaller: Call exception...", then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hive Metastore Known Issues

HMS Read Authorization: `get_num_partitions_by_filter` Ignores Authorization

A user can get the number of partitions of a table regardless of the user's permissions

HMS Read Authorization: `Get_Partitions_With_Auth` Returns All Partitions in a Table When User Has Select Access to One Column

When a user does not have any privilege on that table, including access to any of its columns, then the user has no access to the table's partition metadata. If a user has select permission on any one column of a table, then the can get all metadata of the partitions for the table, including columns that the user does not have any permission on.

HMS Read Authorization: `Partition_Name_To_Vals` Is Not Protected by Read Authorization

A user can get the partition values of a valid partition name regardless of their permissions.

HMS Notifications API is Not Protected by Server Side Read Authorization

A user without any privileges cannot get metadata of a database or a table from the HMS server. However, it is possible for such a user to access the metadata changes.

Hue Known Issues

The following sections describe known issue and workaround in Hue for CDH 6.2.0:

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - *The Add Description* field in the Table schema browser does not sanitize user inputs as expected.
- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower
- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower
- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls

Issuing DDL statements using Hue's Impala editor or invoking Hue's "Refresh Cache" function in the left-side metadata browser results in Hue issuing INVALIDATE METADATA calls to the Impala service. This call is expensive and can result in a significant system impact, up to and including full system outage, when repeated in sufficient volume. This has been corrected in HUE-8882.

Components affected:

- Hue
- Impala

Products affected:

- Cloudera Enterprise 5
- Cloudera Enterprise 6

Releases affected:

- CDH 5.15.1, 5.15.2
- CDH 5.16.x
- CDH 6.1.1
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: End-users using Impala editor in Hue.

Severity: High

Impact: Users running DDL statements using the Hue Impala editor or invoking Hue's Refresh Cache function causes INVALIDATE METADATA commands to be sent to Impala. Impala's metadata invalidation is an expensive operation and could cause impact on the performance of subsequent queries, hence leading to the potential for significant impact on the entire cluster, including the potential for whole-system outage.

Action required:

- CDH 6.x customers: Upgrade to CDH 6.3.4 that contains the fix.
- CDH 5.x customers: Contact Cloudera Support for further assistance.

Apache issue: [HUE-8882](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls](#)

Hue Silently Disables StartTLS in LDAP Connections

There are two mechanisms to secure communication to an LDAP server. One is to use an 'ldaps' connection, where all traffic is encrypted inside a TLS tunnel - much like 'https'. The other is to use 'StartTLS', where traffic begins unencrypted in the "ldap" protocol and then upgrades itself to a TLS connection.

If StartTLS is enabled in the Hue configuration but the 'ldap_cert' parameter is not configured, then Hue silently disables StartTLS.

StartTLS will not be used for synchronization or import, even if StartTLS is enabled and the 'ldap_cert' parameter is set.

The result is that connections that the administrator assumes to be secured, using StartTLS, are not actually secure.

CVE: CVE-2019-19146

Date/time of detection: 22nd March, 2019

Detected by: Ben Gooley, Cloudera

Severity (Low/Medium/High): 8.8 High [CVSS AV:N/AC:L/PR:N/UI:R/S:U/C:H/I:H/A:H](#)

Products affected: CDH

Releases affected:

- CDH 5.x
- CDH 6.1.0
- CDH 6.1.1
- CDH 6.2.0
- CDH 6.2.1
- CDH 6.3.0

Users affected: All users who are using StartTLS enabled in the Hue configuration when using LDAP as Authentication Backend to login in Hue.

Impact: Sensitive data exposure.

Immediate action required:

- **Upgrade (recommended):** Update to a version of CDH containing the fix.
- **Workaround:** Use “ldaps” instead of “ldap” and StartTLS.

Addressed in release/refresh/patch: CDH 6.3.1 and above

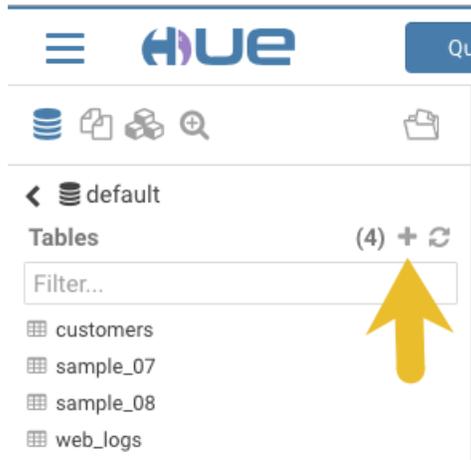
Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-371: Hue Silently Disables StartTLS in LDAP Connections](#)

Table Browser Must Be Refreshed to View Tables Created with the Data Import Wizard

When you create a new table from a file by using the Data Import Wizard, the newly created table columns do not display in the Table Browser until you refresh it.

For example:

1. Create a table from the sample file `web_logs_2.csv` by clicking the plus sign in the left panel, which launches the Data Import Wizard:



2. After you define the table, click **Submit** to generate the new table:

Pick data from file /user/admin/2015_11_19/web_logs_2.csv

Move it to table default.web_logs_2

DESTINATION

Name default.web_logs_2

PROPERTIES

Format Text

Extras

Partitions + Add partition

FIELDS

| | | | | | |
|------|---------|------|--------|---------------------|---------------------|
| Name | field_1 | Type | bigint | 1480895575574446081 | 1480895575574446082 |
| Name | field_2 | Type | string | hbase | static |
| Name | field_3 | Type | bigint | 595 | 831 |
| Name | field_4 | Type | string | Hyderabad | Hyderabad |

Back Submit

Define table characteristics.

Click to generate table.

3. After you generate the new table, you can see it listed on the left assist panel, but when you click the table name to display the columns, an error displays:

default

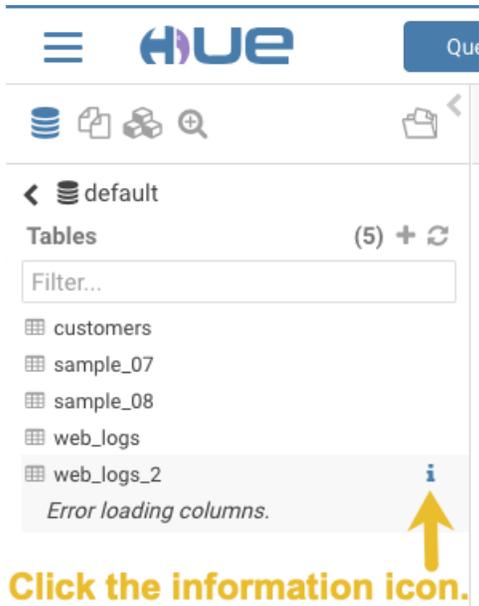
Tables (5) +

Filter...

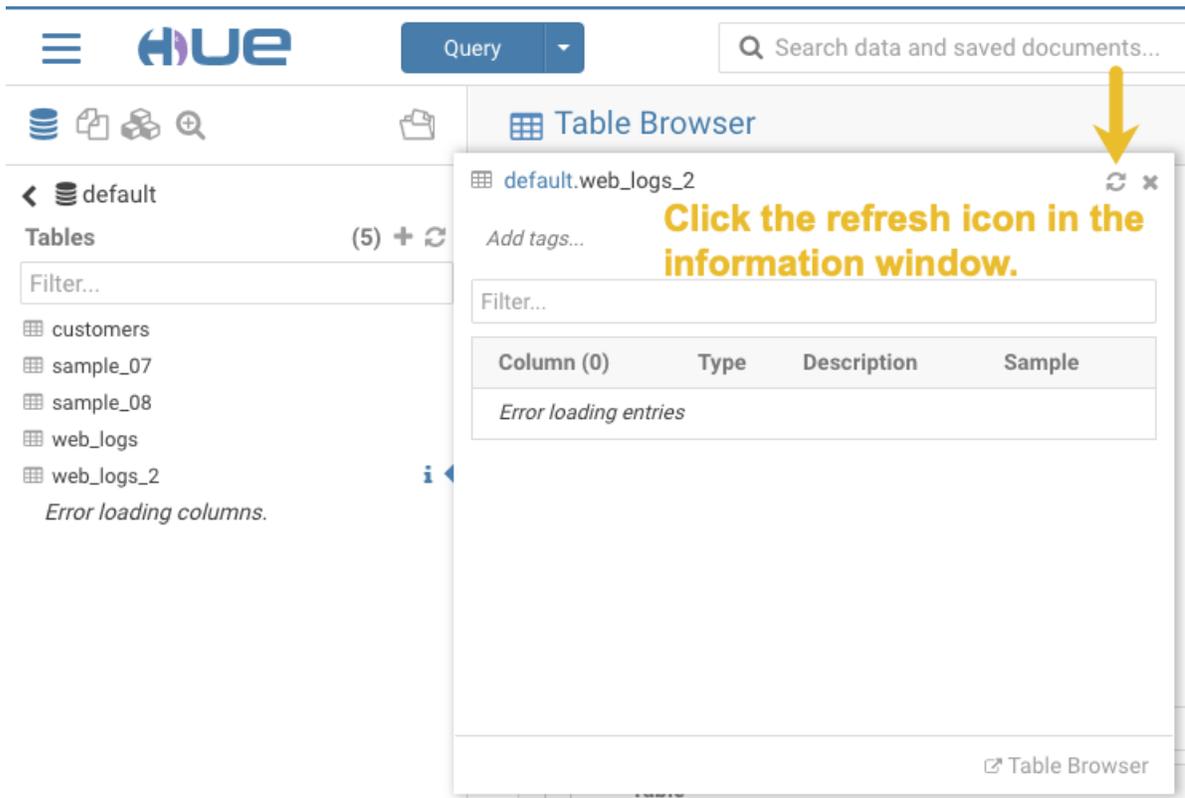
- customers
- sample_07
- sample_08
- web_logs
- web_logs_2**
Error loading columns.

Workaround:

1. Click the information icon that is adjacent to the new table:



2. In the information window that opens, click the refresh icon in the upper right corner to view the table columns:



Using the refresh icon in the information window is the least expensive way to refresh the page so performance is not affected.

Affected Version(s): CDH 6.2.0

Cloudera Issue: CDH-77238

Hue does not support the Spark App

Hue does not currently support the Spark application.

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname` only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization

is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \(\string\) [=:].*` And the replacement could be for example: `secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

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Products affected:

- CDP Private Cloud Base
- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: [CVE-2021-28131](#)

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

System-wide auth-to-local mapping not applied correctly to Kudu service account

Due to system `auth_to_local` mapping, the principal may be mapped to some local name.

When running with Kerberos enabled, you may hit the following error message where `<random-string>` is some random string which doesn't match the primary in the Kerberos principal.

```
WARNINGS: TransmitData() to X.X.X.X:27000 failed: Remote error: Not authorized:
{username='<random-string>', principal='impala/redacted'} is not allowed to access
DataStreamService
```

Workaround: Start Impala with the `--use_system_auth_to_local=false` flag to ignore the system-wide `auth_to_local` mappings configured in `/etc/krb5.conf`.

Affected Versions: CDH 5.15, CDH 6.1 and higher

Apache Issue: [KUDU-2198](#)

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate
section memory!
terminate called after throwing an instance of
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>
>'
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max
echo 2000000 > /proc/sys/kernel/pid_max
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)

Breakpad minidumps can be very large when the thread count is high

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump

file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the impalad daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Incorrect result due to constant evaluation in query with outer join

An `OUTER JOIN` query could omit some expected result rows due to a constant such as `FALSE` in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
  INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
  RIGHT JOIN alltypes a3 ON a1.year = a1.bigint_col;
+-----+
| Explain String |
+-----+
| Estimated Per-Host Requirements: Memory=1.00KB VCores=1 |
| 00:EMPTYSET |
+-----+
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a `LIKE` operator is an escaped `\%` character, it does not match a `%` final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: impala::Coordinator::ValidateCollectionSlots

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the  
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Configuration needed for Flume to be compatible with Impala

For compatibility with Impala, the value for the Flume HDFS Sink `hdfs.writeFormat` must be set to `Text`, rather than its default value of `Writable`. The `hdfs.writeFormat` setting must be changed to `Text` before creating data files with Flume; otherwise, those files cannot be read by either Impala or Hive.

Resolution: This information has been requested to be added to the upstream Flume documentation.

Affected Versions: All CDH 6 versions

Cloudera Issue: CDH-13199

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null", "string"]` instead of `["string", "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Set limits on size of expression trees

Very deeply nested expressions within queries can exceed internal Impala limits, leading to excessive memory usage.

Workaround: Avoid queries with extremely large expression trees. Setting the query option `disable_codegen=true` may reduce the impact, at a cost of longer query runtime.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4551](#)

Impala does not support running on clusters with federated namespaces

Impala does not support running on clusters with federated namespaces. The `impalad` process will not start on a node running such a filesystem based on the `org.apache.hadoop.fs.viewfs.ViewFs` class.

Workaround: Use standard HDFS on all Impala nodes.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-77](#)

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for `impalad_flags`** to specify the load balancer address with the HiveServer2 port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

Unable to Correctly Parse the Terabyte Unit

Impala does not support parsing strings that contain "TB" when used as a unit for terabytes. The flags related to memory limits may be affected, such as the flags for scratch space and data cache.

Workaround: Use other supported units to specify values, e.g. GB or MB.

Affected Versions: CDH 6.3.x and lower versions

Fixed Versions: CDH 6.4.0

Apache Issue: [IMPALA-8829](#)

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

Casting scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: All CDH 6 versions

Apache Kafka Known Issues

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to true.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: [KAFKA-2561](#)

Cloudera Issue: None

Connections with Expired Delegation Tokens Remain Active

Connections with expired delegation tokens stay alive even if the token expires. The connection will only terminate if the client disconnects. Once the client is disconnected it will not be able to reconnect with the expired token.

Workaround: N/A

Affected Versions: CDH 6.2.x

Fixed Versions: CDH 6.3.0 and higher

Apache Issue: [KAFKA-7352](#)

Cloudera Issue: N/A

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions: All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

Apache Kudu Known Issues

The following are known bugs and issues in Kudu. Note that this list is not exhaustive, and is meant to communicate only the most important known issues.

Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement

DDL and DML operations can accumulate in the Kudu tablet replica's write ahead log (WAL) during normal operation. Upon the shutdown of a tablet replica (for example, right before removing the replica), information on the accumulated operations (first 50) are printed into the tablet server's INFO log file.

A bug was introduced with the fix for KUDU-2690. The code contains a flipped if-condition that results in de-referencing of an invalid pointer while reporting on a pending ALTER TABLE operation in the tablet replica's WAL. The issue manifests itself in kudu-tserver processes crashing with SIGSEGV (segmentation fault).

The occurrence of the issue is limited to scenarios which result in accumulating at least one pending ALTER TABLE operation in the tablet replica's WAL at the time when the tablet replica is shut down. An example scenario is an ALTER TABLE request (for example, adding a column) immediately followed by a request to drop a tablet (for example, drop a range partition). Another example scenario is shutting down a tablet server while it's still processing an ALTER TABLE request for one of its tablet replicas. A slowness in file system operations increases the chances for the issue to manifest itself.

Apache issue: [KUDU-2690](#)

Component affected: Kudu

Products affected: CDH

Releases affected:

- CDH 6.2.0, 6.2.1
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Kudu clusters with the impacted releases.

Impact: In the worst case, multiple kudu-tserver processes can crash in a Kudu cluster, making data unavailable until the affected tablet servers are started back.

Severity: High

Action required:

- **Workaround:** Avoid dropping range partitions and tablets right after issuing ALTER TABLE request. Wait for the pending ALTER TABLE requests to complete before dropping tablets or shutting down tablet servers.
- **Solution:** Upgrade to CDH 6.3.4 or CDP

Knowledge article: For the latest update on this issue see the corresponding Knowledge article:

[TSB 2020-449: Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement](#)

Kudu Masters unable to join back after a restart

In a multi master Kudu environment, if a master is restarted or goes offline for a few minutes, it can occasionally have trouble joining the cluster on startup. For example, if this happens in case of three kudu masters, and one of the other two masters is stopped or dies during this time, then the overall Kudu cluster is down because the majority of the masters are not running.

This issue is resolved by the [KUDU-2748](#) upstream JIRA.

Products affected: Apache Kudu

Affected version:

- CDH 5.14.0, 5.14.2, 5.14.4
- CDH 5.15.0, 5.15.1, 5.15.2
- CDH 5.16.1, 5.16.2
- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0, 6.2.1

Fixed version:

- CDH 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-442: Kudu Masters unable to join back after a restart](#)

Timeout Possible with Log Force Synchronization Option

If the Kudu master is configured with the `-log_force_fsync_all` option, tablet servers and clients will experience frequent timeouts, and the cluster may become unusable.

Affected Versions: All CDH 6 versions

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Fault Tolerant Scan Memory Issue

Unlike regular scans, fault tolerant scans will allocate all required memory when the scan begins rather than as it progresses. This can be significant for big tablets. Moreover, this memory usage isn't counted towards the tablet server's overall memory limit, raising the likelihood of the tablet server being out-of-memory killed by the kernel.

Affected Versions: CDH 6.2 / Kudu 1.9 and lower

Apache Issue: [KUDU-2466](#)

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in Parquet.

Apache Pig Known Issues

There are no known issues in this release.

Apache Phoenix Known Issues

The Phoenix artifacts provided in the Maven repository have transitive dependencies on some artifacts that are not available either in the Apache central repository, the Cloudera provided CDH repository, or the Cloudera provided Phoenix repository.

Workaround: When you add a dependency on any of the provided Maven Phoenix artifacts, you must exclude the `org.glassfish.web:javax.servlet.jsp` artifact. For example:

```
<dependency>
  <groupId>org.apache.phoenix</groupId>
  <artifactId>phoenix-core</artifactId>
  <version>5.0.0-cdh6.2.0</version>
  <exclusions>
    <exclusion>
      <groupId>org.glassfish.web</groupId>
      <artifactId>javax.servlet.jsp</artifactId>
    </exclusion>
  </exclusions>
</dependency>
```

Affected Versions: CDH 6.2.0

Cloudera Issue: CDH-81419

Cloudera Search Known Issues

The current release includes the following known limitations:

Default Solr core names cannot be changed (limitation)

Although it is technically possible to give user-defined Solr core names during core creation, it is to be avoided in the context of Cloudera Search. Cloudera Manager expects core names in the default "collection_shardX_replicaY" format. Altering core names results in Cloudera Manager being unable to fetch Solr metrics for the given core and this, eventually, may corrupt data collection for co-located core, or even shard and server level charts.

Processing UpdateRequest with delegation token throws NullPointerException

When using the Spark Crunch Indexer or another client application which utilizes the SolrJ API to send Solr Update requests with delegation token authentication, the server side processing of the request might fail with a `NullPointerException`.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Apache Issue: SOLR-13921

Cloudera Issue: CDH-82599

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

HBase Lily indexer might fail to write role log files

In certain scenarios the HBase Lily Indexer (Key-Value Store Indexer) fails to write its role log files.

Workaround: None

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82342

Adding a new indexer instance to HBase Lily Indexer fails with GSSException

When Kerberos authentication is enabled and adding a new indexer instance to HBase Lily Indexer (Key-Value Store Indexer), the authentication might fail when Lily is communicating to the HBase Master process, throwing a similar Exception:

```
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid credentials provided (Mechanism level: Failed to find any Kerberos tgt)]
```

Workaround: Ensure that the Lily indexer has a Sentry dependency configured by following these steps:

1. Go to **Cloudera Manager > Key-Value Store indexer > Configuration**.
2. Make sure the **Sentry Service** configuration option points to a Sentry service instance instead of **none**.

The workaround does not require defining any Sentry roles or privileges, it is just to trigger a code execution path which will authenticate the HBase service user.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82566

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with CrunchIndexerTool, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the MapReduceIndexerTool nor the HBaseMapReduceIndexerTool

The MapReduceIndexerTool and the HBaseMapReduceIndexerTool can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the MapReduceIndexerTool or HBaseMapReduceIndexerTool. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the “Browse” and “Spell” Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irrecoverably corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool` multiple times may produce duplicate entries in a collection.

Repeatedly running the `MapReduceIndexerTool` on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the `HBaseMapReduceIndexerTool` unless it is run with more than zero reducers.

Workaround: To avoid this issue, use `HBaseMapReduceIndexerTool` with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139

Apache Sentry Known Issues

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.

Affected Versions:

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694

GRANT/REVOKE operations could fail if there are too many concurrent requests

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.

Affected Versions: CDH 5.13.0 and above

Apache Issue: [SENTRY-1855](#)

Cloudera Issue: CDH-56553

Creating large set of Sentry roles results in performance problems

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.

Affected Versions: CDH 5.13.0 and above

Cloudera Issue: CDH-59010

Users can't track jobs with Hive and Sentry

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above

Cloudera Issue: CDH-22890

Column-level privileges are not supported on Hive Metastore views

`GRANT` and `REVOKE` for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

SELECT privilege on all columns does not equate to SELECT privilege on table

Users who have been explicitly granted the `SELECT` privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as `SELECT COUNT (1)` or `SELECT COUNT (*)` will not work even if you have the `SELECT` privilege on all columns.

There is one exception to this. The `SELECT * FROM TABLE` command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The EXPLAIN SELECT operation works without table or column-level privileges

Users are able to run the `EXPLAIN SELECT` operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types Server and URI are not supported in SHOW GRANT ROLE *roleName* on OBJECT *objectName*

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|------------------------------------|-----------------------------------|
| <code>hdfs://absolute/path/</code> | <code>hdfs://relative/path</code> |
| <code>s3a://bucketname/</code> | <code>s3a://bucketname</code> |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6.1.x. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

RDD.repartition() has different failure handling in Spark 2.4 and may cause job failures

The `RDD.repartition()` transformation, which reshuffles data in the RDD randomly to create either more or fewer partitions and then balances it across the partitions, was using a round-robin method to distribute data that caused incorrect answers to be returned for RDD jobs. This issue has been corrected, but it introduced a behavior change in RDD job failure handling. Now, Spark actively fails a job if there is a fetch failure that was caused by a node failure after repartitioning.

Workaround: Use the `RDD.checkpoint()` method to save the intermediate RDD data to HDFS. First, call `SparkContext.setCheckpointDir(directory: String)` to set the checkpoint directory where the intermediate data will be saved. Note that the directory must be an HDFS path. Then mark the RDD for checkpointing by calling `RDD.checkpoint()` when you use the `RDD.repartition()` transformation.

Apache Issue: [SPARK-23243](#)

Cloudera Issue: CDH-76413

Structured Streaming exactly-once fault tolerance constraints

In Spark Structured Streaming, the exactly-once fault tolerance for `file sink` is valid only for files that are in the manifest. These files are located in the `_spark_metadata` subdirectory of the `file sink` output directory. Only process files that have file names starting with digits. Other temporary files can also appear in this directory, but they should not be processed. Typically, these temporary file names start with a period (".").

You can list the valid manifest files, excluding the temporary files, by using a command like the following, which assumes your output directory is located at `/tmp/output`. As the appropriate user, run the following command to list the valid manifest files:

```
hadoop fs -ls /tmp/output/_spark_metadata/[0-9]*
```

Workaround: None

Affected Versions: CDH 6.1.0 and higher

Cloudera Issue: CDH-75191

Spark SQL does not respect size limit for the varchar type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's `client` mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

Apache Sqoop Known Issues

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (doc import + `--as-parquetfile`) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (`sqoop import --as-parquetfile`) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \$CONDITIONS" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/533cac42-5d69-4e46-88c2-173bedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a `--target-dir` which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

There are no known issues in this release.

[CDH 6.2.0 Release Notes](#)

The following topics describe new features, fixed issues, incompatible changes, and known issues for CDH 6.2.0:

[New Features in CDH 6.2.0](#)

See below for new features in CDH 6.2.0, grouped by component:

Apache Accumulo

There are no notable new features in this release.

Apache Avro

There are no notable new features in this release.

Apache Crunch

There are no notable new features in this release.

Apache Flume

In CDH 6.2, Flume is rebased on Apache Flume 1.9, which provides a number of improvements, including:

- Flume HDFS Sink retries close a configurable number of times with a configurable interval in between before attempting the recoverLease.
- Global SSL keystore parameters can be specified through the standard -D JSE system properties or in environment variables. Component-level configuration is also possible.
- Update to Kafka 2.0 client.
- SSL/TLS support for syslog and multi port syslog sources has been added.
- The new default of hdfs.callTimeout is 30 sec.
- Two new interfaces for getting the transaction capacity and the batch size fields have been added to prevent source batch size larger than the channel transaction capacity.

For more information on new features and improvements added in Flume 1.9, see the [Apache Flume 1.9 Release Notes](#).

Apache Hadoop

Hadoop Common

There are no notable new features in this release.

HDFS

The following are some of the new features in this release of HDFS:

JournalNode Synchronization

CDH now supports synchronizing the contents of JournalNodes in the cluster. This capability helps in maintaining consistency in the contents of all the JournalNodes across the cluster.

For more information, see [Synchronizing the contents of JournalNodes](#).

Option for fixing misreplicated blocks

The `hdfs fsck` command now includes the `-replicate` option which triggers the replication of misreplicated data blocks.

For more information, see [Fixing Block Inconsistencies](#).

MapReduce

There are no notable new features in this release.

YARN

The following are some of the notable new features in this release of YARN:

GPU Usage

CDH supports NVIDIA GPU as a resource for YARN. GPU use can be enabled with Cloudera Manager.

For more information, see [Enable GPU Using Cloudera Manager](#).

Custom Resource Types

CDH supports the definition and management of custom resources. This means that the resource system in YARN is configurable. Resources can be created with Cloudera Manager.

For more information, see [Create Custom Resource Using Cloudera Manager](#).

Apache HBase

The following are some of the notable new features in this release of HBase:

HBase Pre-Upgrade Tools Checkbox

There are three pre-upgrade tools that help you to validate HBase compatibility when upgrading a CDH 5 cluster to CDH 6:

- `hbase pre-upgrade validate-dbe` and `hbase pre-upgrade validate-hfile`: These tools validate that none of your tables or snapshots uses the PREFIX_TREE Data Block Encoding.
- `hbase pre-upgrade validate-cp`: This tool validates that your co-processors are compatible with the upgrade.

When you are attempting to upgrade from a CDH 5 cluster to a CDH 6 cluster checkboxes appear to ensure that you have performed all the HBase related pre-upgrade migration steps. For more information, see [Migrating Apache HBase Before Upgrading to CDH 6](#).

HBase Serial Replication

Serial replication allows the HBase Replication to send updates to a remote cluster in an ordered way. For example, it can send the updates in the same order as the change was received by the source. There are two ways to enable this feature:

- Specify the `SERIAL => true` flag when a new peer is created:

```
hbase> add_peer 'serialpeer1', CLUSTER_KEY => "cluster.example.com:2181:/hbase", SERIAL => true
```

- Modify an existing peer:

```
hbase> set_peer_serial 'serialpeer1', true
```

If Lily HBase NRT Indexer Service is used, Cloudera recommends not to use HBase Serial Replication as it causes additional delays to propagate updates to Solr.

Additional IO Engine Support

Two new bucket cache io engine types are supported:

- `mmap`: Stores and accesses cache through memory mapping to a file under a specified path.
- `pmem`: Uses the direct access capabilities from a persistent memory devices. It can be configured only for paths mounted on DC PMEM devices.

These two engines can be configured only in Cloudera Manager using safety valve. For more information, see [Configuring the Off-heap BucketCache](#).

Apache Hive / Hive on Spark / HCatalog

Apache Hive

The following are some of the notable new features in this release of Hive:

Compile Lock Removal

Hive now supports the removal of the query compilation lock. Deactivating the compilation lock enables a controlled number of queries to compile in parallel. The default degree of parallelism (number of workers) is three, and users can configure this in Cloudera Manager depending on their needs.

Learn more about this feature in [Removing the Hive Compilation Lock](#).

Dynamic Partition Insert

You can now issue a query to add partitions to HMS in batch instead of 1-by-1. If you insert a large number, such as 1-2k, of partitions you can experience timeout issues. Adjust `hive.metastore.client.socket.timeout` (when using Hive) and `spark.hadoop.hive.metastore.client.socket.timeout` (when using Spark). Try a value of 600 seconds of timeout to alleviate the problem.

Secured S3 Credentials for Hive

S3 credentials are now stored securely by Cloudera Manager for use with Hive. This enables multi-user Hive-on-S3 clusters.

Learn more at [Configuring the Amazon S3 Connector](#).

Secured ADLS Credentials for Hive

ADLS credentials are now stored securely via Cloudera Manager for use with Hive. This enables multi-user Hive-with-ADLS clusters.

Learn more at [Configuring ADLS Access Using Cloudera Manager](#).

Hive on Spark

There are no notable new features in this release.

Hue

The following are some of the notable new features in this release of Hue.

Apache Tez Integration Improvements

Now when you are using Tez as the query execution engine for Hive, jobs are displayed in the Hue Job Browser. The query ID is printed and query progress is displayed.

For more information about this improvement, see the [Hue blog](#).

Enhanced Impala SQL Query Troubleshooting

Graphical displays of Impala SQL query profiles have been enhanced with greater detail. This added information helps you understand where and why query bottlenecks occur and how to optimize your queries to eliminate them. For

example, detailed information is now provided about CPU processing time and network or disk I/O time for each node of query execution:

Jobs **Queries** Workflows Schedules ↗ ✕

SELECT * FROM transactions1g_s07 left JOIN transactions1g...

ID
6e45b0268a0f3fc6:36e07e1900000000

Plan Query Text Plan Summary Profile Memory Backends Instances

The diagram illustrates a query execution plan with the following nodes and their execution times:

- EXCHANGE unpartitioned**: 4.0 ms
- HASH JOIN left outer join, broadcast**: 2.5 s (Join condition: s07.field_1 = s08.field_1)
- EXCHANGE broadcast**: 7.2 s
- SCAN HDFS default.transactions1g_s07**: 89.0 ms
- SCAN HDFS default.transactions1g_s08**: 412 ms

Dark blue = CPU time
Light blue = network or disk I/O time

In addition, click the header of the pane to open a details panel:

Jobs **Queries** Workflows Schedules ↗ ✕

SELECT * FROM transactions1g_s07 left JOIN transactions1g...

ID
6e45b0268a0f3fc6:36e07e1900000000

Plan **Query** Text Plan Summary Profile Memory Backends Instances

Details Panel

Overview

Top Nodes (10.9 s)

- EXCHANGE 7.2 s
- HASH JOIN 2.5 s
- SCAN HDFS 412 ms
- SCAN HDFS 89.0 ms
- EXCHANGE 4.0 ms

Planning (4.1 ms)

- Metadata of all ... 521 us
- Analysis finishe... 828 us
- Value transfer g... 97.9 us
- Single node pla... 1.3 ms
- Runtime filters c... 150 us
- Distributed plan ... 47.7 us
- Lineage info co... 74.6 us
- Planning finishe... 1.2 ms

Execution (2 m 21 s)

To access this feature:

1. Run a query in the Hue Impala editor.
2. From the menu on the left, launch the Job Browser.
3. In the Job Browser, select the **Queries** tab.
4. In the list of queries, click on the query that you just ran to launch the graphical display of the query.

For more information about this new feature, see the [Hue blog](#).

Apache Impala

The following are some of the notable new features in this release of Impala.

Multi-cluster Support

- Remote File Handle Cache

Impala can now cache remote HDFS file handles when the `--cache_remote_file_handles` `impalad` flag is set to `true`. This feature does not apply to non-HDFS tables, such as Kudu or HBase tables, and does not apply to the tables that store their data on cloud services such as S3 or ADLS.

See [Scalability Considerations for File Handle Caching](#) for file handle caching in Impala.

Enhancements in Resource Management and Admission Control

- Admission Debug page is available in [Impala Daemon web UI](#) at `/admission` and provides the following information about Impala resource pools.
 - Pool configuration
 - Relevant pool stats
 - Queued queries in order of being queued (local to the coordinator)
 - Running queries (local to this coordinator)
 - Histogram of the distribution of peak memory usage by admitted queries
- A new query option, `NUM_ROWS_PRODUCED_LIMIT`, was added to limit the number of rows returned from queries. Impala will cancel a query if the query produces more rows than the limit specified by this query option. The limit applies only when the results are returned to a client, e.g. for a `SELECT` query, but not an `INSERT` query. This query option is a guardrail against users accidentally submitting queries that return a large number of rows.

Metadata Performance Improvements

- [Automatic Metadata Sync using Hive Metastore Notification Events](#)

When enabled, the `catalogd` polls Hive Metastore (HMS) notifications events at a configurable interval and syncs with HMS. You can use the new web UI pages of the `catalogd` to check the state of the automatic invalidate event processor.

Note: This is a preview feature in CDH 6.2, and you should not use the feature without the guidance of Cloudera Support. If you are interested in using the feature, file a support ticket and work through Cloudera Support.

Compatibility and Usability Enhancements

- Impala can now read the `TIMESTAMP_MILLIS` and `TIMESTAMP_MICROS` Parquet types.

See [Using the Parquet File Format with Impala Tables](#) for the Parquet support in Impala.
- The [LEVENSHTEIN](#) string function is supported.

The function returns the Levenshtein distance between two input strings, the minimum number of single-character edits required to transform one string to another.
- The `IF NOT EXISTS` clause is supported in the [ALTER TABLE](#) statement.
- Extended or verbose [EXPLAIN](#) output includes the following new information for queries:
 - The text of the analyzed query that may have been rewritten to include various optimizations and implicit casts.
 - The implicit casts and literals shown with the actual types.
- CPU resource utilization (user, system, iowait) metrics were added to the [Impala profile](#) outputs.

Security Enhancement

The [REFRESH AUTHORIZATION](#) statement was implemented for refreshing authorization data.

Apache Kafka

The following are some of the notable new features in this release of Kafka CDH 6.2.0.

Rebase on Apache Kafka 2.1.0

The Kafka version in CDH 6.2.0 is based on Apache Kafka 2.1.0.

Apache Kafka 2.1.0 introduces the following notable changes:

- The internal schema used to store consumer offsets has been changed.



Warning: As a result of this change, downgrading to previous versions is not be possible after upgrade.

- Support for Zstandard compression has been added.
- Unclean leader election is automatically enabled by the controller when `unclean.leader.election.enable` config is dynamically updated by using per-topic config override.
- A new method `AdminClient#metrics()`, has been added to `AdminClient`. This allows any application using the `AdminClient` to gain more information and insight by viewing the metrics captured from the `AdminClient`.

For upstream release notes, see Apache Kafka version [2.1.0](#) release notes.

New Metrics

A number of new metrics are introduced for Kafka. The following list is only a summary, for full list of metrics, see [Metrics Reference](#).

Broker Metrics related to the following:

- Zookeeper Request Latency
- Consumer Groups Completing Rebalance
- Consumer Groups Dead
- Consumer Groups Empty
- Consumer Groups Preparing Rebalance
- Consumer Groups Stable
- Zookeeper Auth Failures
- Zookeeper Disconnects
- Zookeeper Expires
- Zookeeper Read Only Connects
- Zookeeper Sasl Authentications
- Zookeeper Sync Connects
- Incremental Fetch Session Evictions Rate
- Number of Incremental Fetch Partitions Cached
- Number of Incremental Fetch Sessions
- Unclean Leader Election Enable Rate and Time

Support for Authentication with Delegation Tokens

As of CDH 6.2.0, Cloudera supports delegation token based authentication on Kafka clusters. Delegation token based authentication is a lightweight authentication method designed to complement existing SASL authentication. Although Kafka delegation tokens make use of the SCRAM authentication model, SCRAM is not supported. For more information, see [Kafka Delegation Tokens](#).

Broker IDs are visible on the instance page in Cloudera Manager

Broker IDs can now be easily viewed in Cloudera Manager. To view broker IDs select the Kafka service and go to **Instances**. The broker IDs can be found next to each Kafka broker instance enclosed in brackets.

Default Behaviour Changes

Kafka CDH 6.2.0. Introduces the following default behaviour changes:

- Unclean leader election is automatically enabled by the controller when `unclean.leader.election.enable` config is dynamically updated by using per-topic config override.
- Diagnostic data bundles collected by Cloudera Manager from now on include information on Kafka topics. The bundle includes the information exposed by the following two commands:
 - `kafka-topics --describe`
 - `kafka-topics --list`

Apache Kudu

The following are some of the notable new features and enhancements in this release of Kudu:

- Kudu now supports location awareness. The rack assignments made in Cloudera Manager will be used in Kudu automatically.

The `kudu cluster rebalance` tool has been updated to act in accordance with the placement policy of a location-aware Kudu.

Upon upgrading, if rack locations are assigned, you should run the `kudu cluster rebalance` tool to ensure your existing tables are in compliance with the rack awareness placement policy.

See [Kudu Administration](#) for more information about this feature.
- When creating a table, the master now enforces a restriction on the total number of replicas rather than the total number of partitions. If manually overriding `--max_create_tablets_per_ts`, the maximum size of a new table has effectively been cut by a factor of its replication factor. Note that partitions can still be added after table creation.
- The compaction policy has been updated to favor reducing the number of rowsets. This can lead to faster scans and lower bootup times, particularly in the face of a “trickling inserts” workload, where rows are inserted slowly in primary key order.
- A new tablet-level metric, `average_diskrowset_height`, shows how much a replica needs to be compacted, as indicated by the average number of rowsets per unit of key space.
- Scans which read multiple columns of tables undergoing a heavy `UPDATE` workload are now more CPU efficient. In some cases, scan performance of such tables may be several times faster upon upgrading to this release.
- Kudu-Spark users can now provide the short “kudu” format alias to Spark. This enables using `.format(“kudu”)` in places where you would have needed to provide the fully qualified name like `.format(“org.apache.kudu.spark.kudu”)` or imported `org.apache.kudu.spark.kudu._` and used the implicit `.kudu` functions. See [Kudu Integration with Spark](#) for detail.
- The `KuduSink` class has been added to the Spark integration as a `StreamSinkProvider`, allowing structured streaming writes into Kudu.
- The amount of server-side logging has been greatly reduced for Kudu’s consensus implementation and background processes. This logging was determined to be not useful and unnecessarily verbose.
- The Kudu web UI now clearly indicates which columns are a part of the primary keys.
- The new `kudu table describe` tool describes table attributes, including schema, partitioning, replication factor, column encodings, compressions, and default values.
- The new `kudu table scan` tool scans rows from a table, supporting comparison, in-list, and is-null predicates.

- The new `kudu locate_row` tool allows users to determine what tablet a given primary key belongs to, and whether a row exists for that primary key.
- The new `kudu diagnose dump_mem_trackers` tool allows users to output the contents of the `/mem-trackers` web UI page in the CSV format.

Apache Oozie

There are no notable new features in this release.

Apache Parquet

The following are some of the notable new features in this release of Parquet:

Support for New Logical Type Representation

A new, more flexible logical type API has been introduced in `parquet-mr`—based on the Thrift field in `parquet-format`, which has been available for a while. The new API allows storage and retrieval of different type attributes, for example, timestamp semantics and precision.

The new logical types are represented by the `LogicalTypeAnnotation` class and are entirely forward- and backward-compatible with the previous logical types. Files written using the old API can be read using the new API, and as long as no new types are used, files written using the new API can also be read using the old API.

Apache Phoenix

Starting with Apache Phoenix 5.0.0/ CDH 6.2.0, Phoenix parcel can be installed and used with CDH. You can download and install the Phoenix parcel on CDH 6.2.0. For more information about installing and using Phoenix, see the [Phoenix Guide](#).

Apache Pig

There are no notable new features in this release.

Cloudera Search

There are no notable new features in this release.

Apache Sentry

There are no notable new features in this release.

Apache Spark

Spark Driver Logs

The Spark service collects Spark driver logs when Spark applications are run in YARN-client mode or with the Spark Shell. This feature is enabled by default, and the logs are persisted to an HDFS directory and included in YARN Diagnostic Bundles.

To disable this feature, uncheck **Persist Driver Logs to Dfs** on the **Configuration** page of your Spark service.

For more information, see [Collecting Spark Driver Logs](#).

Spark Structured Streaming reference application for CDH

The Spark structured streaming reference application is a project that includes sample applications that demonstrate an Apache Kafka -> Apache Spark Structured Streaming -> Apache Kudu pipeline for ingestion. The main goal of the project is to aid customers in building a structured streaming application on CDH. For more information, visit [Spark Structured Streaming Reference Application for CDH](#) on GitHub.

Apache Sqoop

The following are some of the notable new features and enhancements in this release of Sqoop:

Support Decimal Type from Parquet Import and Export

Sqoop now supports the import and export of DECIMAL type correctly for both HDFS and Hive import. This feature is turned on by default in new CDH 6.2 clusters. It is turned off by default in older (upgraded) clusters.

Learn more at [Configuring ADLS Access Using Cloudera Manager](#).

Importing Data into Microsoft Azure Data Lake Store (Gen1 and Gen2) Using Sqoop

CDH 6.2 supports using Apache Sqoop with both generations of ADLS. You can use Sqoop to efficiently transfer bulk data between Apache Hadoop and structured datastores such as relational databases. You can use Sqoop to import data from any relational database that has a JDBC adaptor such as SQL Server, MySQL, and others, to the ADLS file system.

For more information, see [Importing Data into Microsoft Azure Data Lake Store Using Sqoop](#).

Apache Zookeeper

There are no notable new features in this release.

Fixed Issues in CDH 6.2.0

CDH 6.2.0 fixes the following issues:

Hue allows unsigned SAML assertions

If Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

Products affected: Hue, CDH

Releases affected:

- CDH 5.15.x and earlier
- CDH 5.16.0, 5.16.1
- CDH 6.0.x
- CDH 6.1.x

User affected: All users who are using SAML with Hue.

CVE: CVE-2019-14775

Date/time of detection: January 2019

Detected by: Joel Snape

Severity (Low/Medium/High): High

Impact:

This is a significant security risk as it allows anyone to fake their access validity and therefore access Hue, even if they should not have access. In more detail: if Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

CVE: CVE-2019-14775

Immediate action required:

- **Upgrade (recommended):** Upgrade to a version of CDH containing the fix.
- **Workaround:** None

Addressed in release/refresh/patch:

- CDH 5.16.2
- CDH 6.2.0

Hue external users granted super user privileges in C6

When using either the `LdapBackend` or the `SAML2Backend` authentication backends in Hue, users that are created on login when logging in for the first time are granted superuser privileges in CDH 6. This does not apply to users that are created through the User Admin application in Hue.

Products affected: Hue

Releases affected: CDH 6.0.0, CDH 6.0.1, CDH 6.1.0

Users affected: All user

Date/time of detection: Dec/12/18

Severity (Low/Medium/High): Medium

Impact:

The superuser privilege is granted to any user that logs in to Hue when LDAP or SAML authentication is used. For example, if you have the `create_users_on_login` property set to true in the **Hue Service Advanced Configuration Snippet (Safety Valve) for `hue_safety_valve.ini`**, and you are using LDAP or SAML authentication, a user that logs in to Hue for the first time is created with superuser privileges and can perform the following actions:

When the `SAML2Backend` is used, Hue accounts that have superuser privileges can:

- Create/Delete users and groups
- Assign users to groups
- Alter group permissions

However, when the `SAML2Backend` is used, users can only log in to Hue using SAML authentication.

When the `LdapBackend` is used, Hue accounts that have superuser privileges can:

- Synchronize Hue users with your LDAP server
- Create local users and groups (these local users can login to Hue only if the mode of multi-backend authentication is set up as `LdapBackend` and `AllowFirstUserDjangoBackend`)
- Assign users to groups
- Alter group permissions

This impact *does not* apply to the following other scenarios:

- When users are synced with your LDAP server manually by using the User Admin page in Hue.
- When you are using other authentication methods. For example:
 - `AllowFirstUserDjangoBackend`
 - Spnego
 - PAM
 - Oauth

When the `LdapBackend` and `AllowFirstUserDjangoBackend` are used, administrators should note:

- Local users, including users created by unexpected superusers, can login through `AllowFirstUserDjangoBackend`.
- Local users in Hue that created as hive, hdfs, or solr have privileges to access protected data and alter permissions in security app.
- Removing the `AllowFirstUserDjangoBackend` authentication backend can stop local users login to Hue, but it requires the administrator to have Cloudera Manager access



Note: Regardless of the authentication backend in use, the Hue superuser cannot perform the following tasks:

- Make any changes related to Sentry if the user has not been granted any privileges in Sentry. The Hue superuser can only view the Security app in the Hue UI.
- Change the authentication backends. This task requires access to Cloudera Manager.

CVE: CVE-2019-7319

Immediate action required: Upgrade and follow the instructions below.

Addressed in release/refresh/patch: CDH 6.1.1 and CDH 6.2.0

After upgrading to 6.1.1 or later, you must run the following update statement in the Hue database:

```
UPDATE useradmin_userprofile SET `creation_method` = 'EXTERNAL' WHERE `creation_method` = 'CreationMethod.EXTERNAL';
```



Important: If the Hue database is using MySQL, before you run this UPDATE statement, check if safe mode is on by using the following query:

```
SELECT @@SQL_SAFE_UPDATES;
```

If the safe mode is turned on, it returns '1'. You can temporarily set it to off by using the following SET statement:

```
SET SQL_SAFE_UPDATES = 0;
```

After running the update statement, to re-enable safe mode:

```
SET SQL_SAFE_UPDATES = 1;
```

After executing the UPDATE statement, new Hue users are no longer automatically created as superusers.

To find out the list of superusers, run SQL query:

```
SELECT username FROM auth_user WHERE superuser = 1;
```

Users who obtained superuser privilege due to this issue need to be revoked manually by using the following steps:

1. Log in to the Hue UI as an administrator.
2. In the upper right corner of the page, click the user drop-down list and select **Manage User**:
3. In the User Admin page, make sure that the **Users** tab is selected and click the name of the user in the list that you want to edit:
4. In the Hue Users - Edit user page, click **Step 3: Advanced**:
5. Clear the checkbox for **Superuser status**:
6. At the bottom of the page, click **Update user** to save the change.

For the latest update on this issue see the corresponding Knowledge article:

[TSB 2019-360: Hue external users granted super user privileges in C6](#)

Spark's stage retry logic could result in duplicate data

Apache Spark's retry logic may allow tasks from both a failed output stage attempt and a successful retry attempt to commit output for the same partition.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDS 2.1.0 release 1 and release 2
- CDS 2.2.0 release 1 and release 2
- CDS 2.3.0 release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-1: Spark's stage retry logic could result in duplicate data](#)

Spark's stage retry logic could result in missing data

Apache Spark's retry logic may allow a task from a failed stage attempt to clean up data from its corresponding task in a successful stage retry attempt..

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDS 2.2.0 release 1, release 2
- CDS 2.3.0 release 1, release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-2: Spark's stage retry logic could result in missing data](#)

Shuffle+Repartition on a DataFrame could lead to incorrect answers

When a repartition follows a shuffle, the assignment of rows to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input rows than the original computation. As a result, some rows can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2
- CDS 2.2.0 release 1, release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-3: Shuffle+Repartition on a DataFrame could lead to incorrect answers](#)

Shuffle+Repartition on an RDD could lead to incorrect answers

When a repartition follows a shuffle, the assignment of records to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input records than the original computation. As a result, some records can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2, release 3
- CDS 2.2.0 release 1, release 2, release 3
- CDS 2.3.0 release 1, release 2, release 3

Fixed versions:

- CDH 6.2.0, 6.3.0

- CDS 2.1.0 release 4
- CDS 2.2.0 release 4
- CDS 2.3.0 release 4

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-4: Shuffle+Repartition on an RDD could lead to incorrect answers](#)

Inconsistent rows returned from queries in Kudu

Due to KUDU-2463, upon restarting Kudu, inconsistent rows may be returned from tables that have not recently been written to, resulting in any of the following:

- multiple rows for the same key being returned
- deleted data being returned
- inconsistent results consistently being returned for the same query

If this happens, you have two options to resolve the conflicts: write to the affected Kudu partitions by:

- re-deleting the known and deleted data
- upserting the most up-to-date version of affected rows.

Products affected: Apache Kudu

Affected version:

- CDH 5.12.2, 5.13.3, 5.14.4, 5.15.1, 5.16.1
- CDH 6.0.1, 6.1.0, 6.1.1

Fixed version:

- CDH 5.16.2
- CDH 6.2.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-353: Inconsistent rows returned from queries in Kudu](#)

Timestamp type-casted to varchar in a binary predicate can produce incorrect result

In an Impala query the timestamp can be type-casted to a varchar of smaller length to convert a timestamp value to a date string. However, if such Impala query is used in a binary comparison against a string literal, it can produce incorrect results, because of a bug in the expression rewriting code. The following is an example of this:

```
> select * from (select cast('2018-12-11 09:59:37' as timestamp) as ts) tbl where cast(ts as varchar(10)) = '2018-12-11';
```

The output will have 0 rows.

Affected version:

- CDH 5.15.0, 5.15.1, 5.15.2, 5.16.0, 5.16.1
- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed versions:

- CDH 5.16.2
- CDH 6.2.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-358: Timestamp type-casted to varchar in a binary predicate can produce incorrect result](#)

XSS Cloudera Manager

Malicious Impala queries can result in Cross Site Scripting (XSS) when viewed in Cloudera Manager.

Products affected: Apache Impala

Releases affected:

- Cloudera Manager 5.13.x, 5.14.x, 5.15.1, 5.15.2, 5.16.1
- Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Users affected: All Cloudera Manager Users

Date/time of detection: November 2018

Severity (Low/Medium/High): High

Impact: When a malicious user generates a piece of JavaScript in the impala-shell and then goes to the Queries tab of the Impala service in Cloudera Manager, that piece of JavaScript code gets evaluated, resulting in an XSS.

CVE: CVE-2019-14449

Immediate action required: There is no workaround, upgrade to the latest available maintenance release.

Addressed in release/refresh/patch:

- Cloudera Manager 5.16.2
- Cloudera Manager 6.0.2, 6.1.1, 6.2.0, 6.3.0

CVE-2018-1296 Permissive Apache Hadoop HDFS listXAttr Authorization Exposes Extended Attribute Key/Value Pairs

AHDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent.

Products affected: Apache HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0, 6.0.1, 6.1.0

Users affected: Users who store sensitive data in extended attributes, such as users of HDFS encryption.

Date/time of detection: December 12, 2017

Detected by: Rushabh Shah, Yahoo! Inc., Hadoop committer

Severity (Low/Medium/High): Medium

Impact: HDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent. This affects features that store sensitive data in extended attributes.

CVE: CVE-2018-1296

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: If a file contains sensitive data in extended attributes, users and admins need to change the permission to prevent others from listing the directory that contains the file.

Addressed in release/refresh/patch:

- CDH 5.15.2, 5.16.1
- CDH 6.1.1, 6.2.0

Kafka JMX Tool Cannot Connect to JMX

The Kafka JMX tool cannot connect to the JMX agent of the Kafka Broker or MirrorMaker if the specified address of the JMX remote connector is bound to 127.0.0.1.

Workaround:

1. In Cloudera Manager go to **Kafka > Instances** and select the affected broker.

- Find the **Additional Broker Java Options** and **Additional MirrorMaker Java Options** properties and add the following Java option to the configuration:

```
-Djava.rmi.server.hostname=127.0.0.1
```



Note: Configuring the **Additional MirrorMaker Java Options** property is only required if you are using JMX with MirrorMaker.

- Restart the affected brokers.

Affected Versions: CDH 6.0.0 and higher

Fixed Versions: CDH 6.2.0

Cloudera Issue: OPSAPS-48695

Kafka Broker Fails to Start Due to Slow Sentry and HMS startup

This issue is encountered on cluster startup and is caused by misalignment between Kafka, Sentry, and HMS. The slow startup of HMS slows down Sentry startup which consequently makes the Kafka connection to Sentry time out. Ultimately, the Kafka broker will be unable to start.

Workaround: Manually increase the number of remote procedure call retries between Sentry and Kafka through the **Sentry Client Advanced Configuration Snippet (Safety Valve) for sentry-site.xml** property.

- Go to **Sentry > Configuration** and find the **Sentry Client Advanced Configuration Snippet (Safety Valve) for sentry-site.xml** property.
- Click on the add button.
- Enter the following data:
 - Name: `sentry.service.client.rpc.retry-total`
 - Value: 20
- Enter a **Reason for change**, and then click **Save Changes** to commit the changes.
- Return to the Home page by clicking the Cloudera Manager logo.
- Click the restart stale services icon next to the Sentry service to invoke the cluster restart wizard.
- Click **Restart Stale Services**.
- Click **Restart Now**.
- Click **Finish**.

Affected Versions: CDH 6.1.0 and higher

Fixed Versions: CDH 6.2.0

Cloudera Issue: CDH-74713

Hadoop LdapGroupsMapping does not support LDAPS for self-signed LDAP server

Hadoop LdapGroupsMapping does not work with LDAP over SSL (LDAPS) if the LDAP server certificate is self-signed. This use case is currently not supported even if Hadoop User Group Mapping LDAP TLS/SSL Enabled, Hadoop User Group Mapping LDAP TLS/SSL Truststore, and Hadoop User Group Mapping LDAP TLS/SSL Truststore Password are filled properly.

Affected Versions: CDH 5.x and 6.0.x versions

Fixed Versions: CDH 6.1.0

Apache Issue: [HADOOP-12862](#)

Cloudera Issue: CDH-37926

Upstream Issues Fixed

The following upstream issues are fixed in CDH 6.2.0:

Apache Accumulo

There are no notable fixed issues in this release.

Apache Avro

There are no notable fixed issues in this release.

Apache Crunch

There are no notable fixed issues in this release.

Apache Flume

The following issues are fixed in CDH 6.2.0:

- [FLUME-2050](#) - Upgrade to Log4j 2.10.0
- [FLUME-2071](#) - Flume Context doesn't support float or double configuration values.
- [FLUME-2464](#) - Remove hadoop and hbase profiles.
- [FLUME-2653](#) - Allow hdfs sink inUseSuffix to be empty
- [FLUME-2698](#) - Upgrade Jetty Version
- [FLUME-2786](#), [FLUME-3056](#), [FLUME-3117](#) - Application enters a deadlock when stopped while handleConfigurationEvent
- [FLUME-2799](#) - Kafka Source - Add message offset to headers
- [FLUME-2894](#) - Flume components should stop in the correct order
- [FLUME-2976](#) - Exception when JMS source tries to connect to a Weblogic server without authentication
- [FLUME-2988](#) - Kafka Sink metrics missing eventDrainAttemptCount
- [FLUME-2989](#) - Added 2 KafkaChannel metrics
- [FLUME-3046](#) - Kafka Sink and Source Configuration Improvements
- [FLUME-3087](#) - Change log level from WARN to INFO
- [FLUME-3101](#) - Add maxBatchCount config property to Taildir Source.
- [FLUME-3115](#) - Update netty library
- [FLUME-3133](#) - Add client IP / hostname headers to Syslog sources.
- [FLUME-3142](#) - Adding HBase2 sink
- [FLUME-3158](#) - Upgrade surefire version and config
- [FLUME-3183](#) - Maven: generate SHA-512 checksum during deploy
- [FLUME-3186](#) - Make asyncHbaseClient config parameters available from Flume config
- [FLUME-3194](#) - Upgrade derby to the latest version
- [FLUME-3201](#) - Fix SyslogUtil to handle RFC3164 format in December correctly
- [FLUME-3223](#) - Flume HDFS Sink should retry close prior recover lease
- [FLUME-3228](#) - Incorrect parameter name in timestamp interceptor docs
- [FLUME-3243](#) - hdfs.callTimeout default increased and deprecated
- [FLUME-3246](#) - Validate flume configuration to prevent larger source batchsize than
- [FLUME-3253](#) - Update jackson-databind dependency to the latest version
- [FLUME-3270](#) - Close JMS resources in JMSMessageConsumer constructor in
- [FLUME-3281](#) - Update to Kafka 2.0
- [FLUME-3282](#) - Use slf4j in every component
- [FLUME-3294](#) - Fix polling logic in TaildirSource
- [FLUME-3296](#) - Revert log4j 2 upgrade on 1.9 branch
- [FLUME-3298](#) - Make hadoop-common optional in hadoop-credential-store-config-filter
- [FLUME-3299](#) - Fix log4j scopes in pom files
- [FLUME-3302](#) - Fix issues discovered during the release
- [FLUME-3314](#) - Fixed NPE in Kafka source/channel during offset migration

Apache Hadoop

The following issues are fixed in CDH 6.2.0:

- [HADOOP-9567](#) - Provide auto-renewal for keytab based logins.
- [HADOOP-11100](#) - Support to configure ftpClient.setControlKeepAliveTimeout.
- [HADOOP-14314](#) - The OpenSolaris taxonomy link is dead in InterfaceClassification.md.
- [HADOOP-14970](#) - MiniHadoopClusterManager does not respect the lack of format option.
- [HADOOP-15214](#) - Make Hadoop compatible with Guava 21.0.
- [HADOOP-15813](#) - Enable a more reliable SSL connection reuse.
- [HADOOP-15823](#) - ABFS: Stop requiring client ID and tenant ID for MSI.
- [HADOOP-15832](#) - Upgrade BouncyCastle to 1.60.
- [HADOOP-15860](#) - ABFS: Throw IllegalArgumentException when a directory or a file name ends with a period.

HDFS

The following issues are fixed in CDH 6.2.0:

- [HDFS-12498](#) - JournalNodeSyncer is not started in a federated HA cluster.
- [HDFS-12579](#) - JournalNodeSyncer should use fromUrl field of EditLogManifestResponse to construct the servlet Url.
- [HDFS-12716](#) - The 'dfs.datanode.failed.volumes.tolerated' property to support minimum number of volumes that should be available.
- [HDFS-12886](#) - Ignore minReplication for block recovery.
- [HDFS-12946](#) - Add a tool to check the rack configuration against EC policies.
- [HDFS-13023](#) - JournalNodeSyncer does not work on a secure cluster.
- [HDFS-13626](#) - Fix incorrect username when the setOwner operation is denied.
- [HDFS-13744](#) - OIV tool should better handle control characters present in file or directory names.
- [HDFS-13761](#) - Add toString method to the AclFeature class.
- [HDFS-13818](#) - Extend OIV to detect FSImage corruption.
- [HDFS-13996](#) - Make HttpFS ACLs RegEx-configurable.
- [HDFS-14008](#) - NameNode should log the snapshotdiff report.
- [HDFS-14015](#) - Improve error handling in hdfsThreadDestructor in the native thread local storage.
- [HDFS-14027](#) - DFSStripedOutputStream should implement both the hsync methods.
- [HDFS-14028](#) - The HDFS OIV temporary directory deletes a folder.
- [HDFS-14053](#) - Provide ability for NameNode to re-replicate based on topology changes.
- [HDFS-14061](#) - Check if the cluster topology supports the EC policy before setting, enabling, or adding it.
- [HDFS-14125](#) - Use a parameterized log format in ECTopologyVerifier.
- [HDFS-14140](#) - JournalNodeSyncer authentication is failing in a secure cluster.
- [HDFS-14188](#) - Make the hdfs ec -verifyClusterSetup command accept an EC policy as a parameter.
- [HDFS-14231](#) - DataXceiver#run() should not log exceptions caused by InvalidTokenException as an error.

MapReduce 2

The following issues are fixed in CDH 6.2.0:

- [MAPREDUCE-4669](#) - MRAM web UI does not work with HTTPS.
- [MAPREDUCE-7125](#) - JobResourceUploader creates LocalFileSystem when it's not necessary.

YARN

The following issues are fixed in CDH 6.2.0:

- [YARN-7396](#) - NPE when accessing container logs due to null dirsHandler
- [YARN-8582](#) - Document YARN support for HTTPS in AM Web server.
- [YARN-8865](#) - RMStateStore contains large number of expired RMDDelegationToken
- [YARN-8899](#) - Fixed minicluster dependency on yarn-server-web-proxy.
- [YARN-8908](#) - Fix errors in yarn-default.xml related to GPU/FPGA.
- [YARN-9087](#) - Improve logging for initialization of Resource plugins.
- [YARN-9095](#) - Removed Unused field from Resource: NUM_MANDATORY_RESOURCES

- [YARN-9213](#) - RM Web UI v1 does not show custom resource allocations for containers page
- [YARN-9318](#) - Resources#multiplyAndRoundUp does not consider Resource Types
- [YARN-9322](#) - Store metrics for custom resource types into FSQueueMetrics and query them in FairSchedulerQueueInfo
- [YARN-9323](#) - FSLeafQueue#computeMaxAMResource does not override zero values for custom resources

Apache HBase

The following issues are fixed in CDH 6.2.0:

- [HBASE-17356](#) - Add replica get support
- [HBASE-18735](#) - Provide an option to kill a MiniHBaseCluster without waiting on shutdown
- [HBASE-19695](#) - Handle disabled table for async client
- [HBASE-19722](#) - Meta query statistics metrics source
- [HBASE-20220](#) - [RSGroup] Check if table exists in the cluster before moving it to the specified regionserver group
- [HBASE-20604](#) - ProtobufLogReader#readNext can incorrectly loop to the same position in the stream until the the WAL is rolled
- [HBASE-20917](#) - MetaTableMetrics#stop references uninitialized requestsMap for non-meta region
- [HBASE-21178](#) - [BC break] : Get and Scan operation with a custom converter_class not working
- [HBASE-21215](#) - Figure how to invoke hbck2; make it easy to find
- [HBASE-21247](#) - Custom Meta WAL Provider doesn't default to custom WAL Provider whose configuration value is outside the enums in Providers
- [HBASE-21281](#) - Upgrade bouncycastle to latest
- [HBASE-21282](#) - Upgrade to latest jetty 9.2 and 9.3 versions
- [HBASE-21297](#) - ModifyTableProcedure can throw TNDE instead of IOE in case of REGION_REPLICATION change
- [HBASE-21300](#) - Fix the wrong reference file path when restoring snapshots for tables with MOB columns
- [HBASE-21314](#) - The implementation of BitSetNode is not efficient
- [HBASE-21321](#) - HBASE-21278 to branch-2.1 and branch-2.0
- [HBASE-21322](#) - Add a scheduleServerCrashProcedure() API to HbckService
- [HBASE-21336](#) - Simplify the implementation of WALProcedureMap
- [HBASE-21338](#) - Warn if balancer is an ill-fit for cluster size
- [HBASE-21342](#) - FileSystem in use may get closed by other bulk load call in secure bulkLoad
- [HBASE-21345](#) - [hbck2] Allow version check to proceed even though master is 'initializing'.
- [HBASE-21349](#) - Do not run CatalogJanitor or Normalizer when cluster is shutting down
- [HBASE-21354](#) - Procedure may be deleted improperly during master restarts resulting in 'Corrupt'
- [HBASE-21355](#) - HStore's storeSize is calculated repeatedly which causing the confusing region split
- [HBASE-21356](#) - bulkLoadHFile API should ensure that rs has the source hfile's write permissions
- [HBASE-21363](#) - Rewrite the buildingHoldCleanupTracker method in WALProcedureStore
- [HBASE-21364](#) - Procedure holds the lock should put to front of the queue after restart
- [HBASE-21371](#) - Hbase unable to compile against Hadoop trunk (3.3.0-SNAPSHOT) due to license error
- [HBASE-21372](#) -) Set hbase.assignment.maximum.attempts to Long.MAX
- [HBASE-21375](#) - Revisit the lock and queue implementation in MasterProcedureScheduler
- [HBASE-21377](#) - Add debug log for procedure stack id related operations
- [HBASE-21384](#) - Procedure with holdlock=false should not be restored lock when restarts
- [HBASE-21385](#) - HTable.delete request use rpc call directly instead of AsyncProcess
- [HBASE-21387](#) - Race condition surrounding in progress snapshot handling in snapshot cache leads to loss of snapshot files
- [HBASE-21388](#) - No need to instantiate MemStoreLAB for master which not carry table
- [HBASE-21391](#) - RefreshPeerProcedure should also wait master initialized before executing
- [HBASE-21395](#) - Abort split/merge procedure if there is a table procedure of the same table going on
- [HBASE-21401](#) - Sanity check when constructing the KeyValue
- [HBASE-21407](#) - Resolve NPE in backup Master UI

- [HBASE-21410](#) - A helper page that help find all problematic regions and procedures
- [HBASE-21413](#) - Empty meta log doesn't get split when restart whole cluster
- [HBASE-21421](#) - Do not kill RS if reportOnlineRegions fails
- [HBASE-21423](#) - Procedures for meta table/region should be able to execute in separate workers
- [HBASE-21437](#) - Bypassed procedure throw IllegalArgumentException when its state is WAITING_TIMEOUT
- [HBASE-21439](#) - RegionLoads aren't being used in RegionLoad cost functions
- [HBASE-21440](#) - Assign procedure on the crashed server is not properly interrupted
- [HBASE-21445](#) - CopyTable by bulkload will write hfile into yarn's HDFS
- [HBASE-21468](#) - separate workers for meta table is not working
- [HBASE-21473](#) - RowIndexSeekerV1 may return cell with extra two \x00\x00 bytes which has no tags
- [HBASE-21480](#) - Taking snapshot when RS crashes prevent we bring the regions online
- [HBASE-21485](#) - Add more debug logs for remote procedure execution
- [HBASE-21490](#) - WALProcedure may remove proc wal files still with active procedures
- [HBASE-21492](#) - CellCodec Written To WAL Before It's Verified
- [HBASE-21498](#) - Master OOM when SplitTableRegionProcedure new CacheConfig and instantiate a new BlockCache
- [HBASE-21511](#) - Remove in progress snapshot check in SnapshotFileCache#getUnreferencedFiles
- [HBASE-21524](#) - Fix logging in ConnectionImplementation.isTableAvailable()
- [HBASE-21545](#) - NEW_VERSION_BEHAVIOR breaks Get/Scan with specified columns
- [HBASE-21551](#) - Memory leak when use scan with STREAM at server side -
- [HBASE-21554](#) - Show replication endpoint classname for replication peer on master web UI
- [HBASE-21567](#) - Allow overriding configs starting up the shell
- [HBASE-21568](#) - Use CacheConfig.DISABLED where we don't expect to have blockcache running
- [HBASE-21570](#) - Add write buffer periodic flush support for AsyncBufferedMutator
- [HBASE-21580](#) - Support getting Hbck instance from AsyncConnection
- [HBASE-21582](#) - If call HBaseAdmin#snapshotAsync but forget call isSnapshotFinished, then SnapshotHFileCleaner will skip to run every time
- [HBASE-21590](#) - Optimize trySkipToNextColumn in StoreScanner a bit.
- [HBASE-21592](#) - quota.addGetResult(r) throw NPE
- [HBASE-21610](#) - , numOpenConnections metric is set to -1 when zero server channel exist
- [HBASE-21620](#) - Problem in scan query when using more than one column prefix filter in some cases
- [HBASE-21629](#) - draining_servers.rb is broken
- [HBASE-21630](#) - [shell] Define ENDKEY == STOPROW
- [HBASE-21631](#) - list_quotas should print human readable values for LIMIT
- [HBASE-21639](#) - maxHeapUsage value not read properly from config during EntryBuffers initialization
- [HBASE-21645](#) - Perform sanity check and disallow table creation/modification with region replication < 1
- [HBASE-21662](#) - Add append_peer_exclude_namespaces and remove_peer_exclude_namespaces shell commands
- [HBASE-21663](#) - Add replica scan support
- [HBASE-21682](#) - Support getting from specific replica
- [HBASE-21694](#) - Add append_peer_exclude_tableCFs and remove_peer_exclude_tableCFs shell commands
- [HBASE-21704](#) - The implementation of DistributedHBaseCluster.getServerHoldingRegion is incorrect
- [HBASE-21705](#) - Should treat meta table specially for some methods in AsyncAdmin
- [HBASE-21712](#) - Make submit-patch.py python3 compatible
- [HBASE-21732](#) - Should call toUpperCase before using Enum.valueOf in some methods for ColumnFamilyDescriptor
- [HBASE-21738](#) - Remove all the CLSM#size operation in our memstore because it's an quite time consuming.
- [HBASE-21746](#) - Fix two concern cases in RegionMover
- [HBASE-21843](#) - RegionGroupingProvider breaks the meta wal file name pattern which may cause data loss for meta region
- [HBASE-21862](#) - IPCUtil.wrapException should keep the original exception types for all the connection exceptions
- [HBASE-21915](#) - Make FileLinkInputStream implement CanUnbuffer
- [HBASE-21960](#) - Ensure RESTServletContainer used by RESTServer

Apache Hive

The following issues are fixed in CDH 6.2.0:

Code Changes Might Be Required

The following fixes might require code changes for the CDH 6.2.0 release of Apache Hive:

Code Changes Should Not Be Required

The following fixes should not require code changes, but they contain improvements that might enhance your deployment:

- [HIVE-15884](#) - Optimize not between for vectorization
- [HIVE-16839](#) - Unbalanced calls to openTransaction/commitTransaction when alter the same partition concurrently
- [HIVE-18238](#) - Driver execution may not have configuration changing side-effects
- [HIVE-18652](#) - Expose remoteBytesReadToDisk via HoS
- [HIVE-19564](#) - Vectorization: Fix NULL / Wrong Results issues in Arithmetic
- [HIVE-20306](#) - Implement projection spec for fetching only requested fields from partitions
- [HIVE-20307](#) - Add support for filterspec to the getPartitions with projection API
- [HIVE-20330](#) - HCatLoader cannot handle multiple InputJobInfo objects for a job with multiple inputs
- [HIVE-20331](#) - Query with union all, lateral view and Join fails with "cannot find parent in the child operator"
- [HIVE-20484](#) - Disable Block Cache By Default With HBase SerDe
- [HIVE-20535](#) - Add new configuration to set the size of the global compile lock
- [HIVE-20661](#) - Dynamic partitions loading calls add partition for every partition 1-by-1
- [HIVE-20722](#) - Switch HS2 CompileLock to use fair locks
- [HIVE-20737](#) - Local SparkContext is shared between user sessions and should be closed only when there is no active
- [HIVE-20776](#) - HMS filterHooks on server-side in addition to client-side
- [HIVE-20796](#) - jdbc URL can contain sensitive information that should not be logged
- [HIVE-20818](#) - Views created with a WHERE subquery will regard views referenced in the subquery as direct input
- [HIVE-20843](#) - Properly detect RELY constraint in primary keys and foreign keys
- [HIVE-20914](#) - MRScratchDir permission denied when "hive.server2.enable.doAs", "hive.exec.submitviachild" are set to "true" and impersonated/proxy user is used
- [HIVE-20924](#) - Property 'hive.driver.parallel.compilation.global.limit' should be immutable at runtime
- [HIVE-20992](#) - Split the config "hive.metastore.dbaccess.ssl.properties" into more meaningful configs
- [HIVE-21015](#) - HCatLoader can't provide statistics for tables not in default DB
- [HIVE-21028](#) - get_table_meta should use a fetch plan to avoid race conditions ending up in NucleusObjectNotFoundException
- [HIVE-21030](#) - Add credential store env properties redaction in JobConf
- [HIVE-21035](#) - Race condition in SparkUtilities#getSparkSession
- [HIVE-21044](#) - Add SLF4J reporter to the metastore metrics systems
- [HIVE-21035](#): Add HMS total api count stats and connection pool stats to metrics
- [HIVE-21077](#) - Database and Catalogs should have creation time
- [HIVE-21083](#) - Remove the requirement to specify the truststore location when TLS to the database is turned on
- [HIVE-21116](#) - HADOOP_CREDSTORE_PASSWORD is not populated under yarn.app.mapreduce.am.admin.user.env
- [HIVE-21320](#) - Portget_fields() and get_tables_by_type() are not protected by HMS server access control

Hue

The following issues are fixed in CDH 6.2.0:

- [HUE-7128](#) - [core] Apply config ENABLE_DOWNLOAD to search dashboard download
- [HUE-7258](#) - [jib] Add config check for Spark history server URL
- [HUE-7919](#) - oozie error 'NoneType' object has no attribute 'is_superuser'
- [HUE-8140](#) - [editor] Stabilize multi-statement execution

- [HUE-8330](#) - [core] Multi cluster support of namespaces and compute
- [HUE-8564](#) - Avro viewer for File Browser
- [HUE-8577](#) - [autocomplete] Update Hive and Impala autocompleter to the latest version
- [HUE-8584](#) - [useradmin] Exposing errors for Add Sync Ldap Group
- [HUE-8585](#) - [useradmin] Exposing errors for Add Sync Ldap Users
- [HUE-8587](#) - Enable queries in Job Browser to work with Smart Connection Pool
- [HUE-8598](#) - [autocomplete] Improve autocomplete for CREATE statements
- [HUE-8605](#) - [metadata] Only show the Table Privilege tab when Sentry is enabled
- [HUE-8610](#) - [tb] The sample call from the Table Browser fails for computes other than default
- [HUE-8616](#) - [cluster] getNamespaces for impala returns namespace with hive compute
- [HUE-8617](#) - [frontend] Support multi cluster in invalidate metadata
- [HUE-8638](#) - [importer] Add autocompletion to query editor in second step of importer
- [HUE-8641](#) - [frontend] Trigger a namespace refresh when the context catalog is cleared
- [HUE-8645](#) - [assist] Improve namespace listing after cluster creation
- [HUE-8648](#) - [importer] Sqoop-configured RDBMS fails
- [HUE-8649](#) - [frontend] Add a performance graph component
- [HUE-8651](#) - [editor] Add a dedicated execution analysis tab in the editor
- [HUE-8657](#) - [frontend] Improve create and configure cluster forms
- [HUE-8659](#) - [importer] Fix js exception with the field editor
- [HUE-8661](#) - [assist] Enable scrollbars in context popover view sql
- [HUE-8664](#) - [importer] Fixed Flume source import properties initialization
- [HUE-8665](#) - [editor] Add basic execution analysis for Impala
- [HUE-8666](#) - [autocomplete] Fix timing issue with "... ? from table" completion
- [HUE-8667](#) - [autocomplete] Fix issue where order by and group by suggestions aren't displayed properly
- [HUE-8668](#) - [editor] Add table names to syntax checker suggestions
- [HUE-8670](#) - [cluster] Adding auto resize option to the update cluster API
- [HUE-8679](#) - [job] Support query interface in multi cluster node
- [HUE-8680](#) - [core] Fill in Impalad WEBUI username passwords automatically if needed
- [HUE-8681](#) - [assist] Include unopened topics in the language ref filter
- [HUE-8682](#) - [backend] Change PAM lib to python-pam-1.8.4
- [HUE-8685](#) - [importer] DB importer always shows DB already exists
- [HUE-8688](#) - Update Chinese language code to enable localization
- [HUE-8690](#) - Fix Hue allows unsigned SAML assertions
- [HUE-8691](#) - [useradmin] Add/sync group does not add users if the objectClass posixGroup already exists in the group LDAP entry
- [HUE-8692](#) - [useradmin] Group sync fails if all group members are not found
- [HUE-8693](#) - [useradmin] Security app only displays 100 users in the impersonate list
- [HUE-8694](#) - [frontend] Fix scroll in the database drop-down menu
- [HUE-8695](#) - [importer] Do not show the command but submit when clicking on submit button

Apache Impala

The following issues are fixed in CDH 6.2.0:

- [IMPALA-341](#) - Remote profiles are no longer ignored by the coordinator for the queries with the `LIMIT` clause.
- [IMPALA-941](#) - Impala supports fully qualified table names that start with a number.
- [IMPALA-1048](#) - The query execution summary now includes the total time taken and memory consumed by the data sink at the root of each query fragment.
- [IMPALA-3323](#) - Fixed the issue where valid impala-shell options, such as `--ldap_password_cmd`, were unrecognized when the `--config_file` option was specified.
- [IMPALA-5397](#) - If a query has a dedicated coordinator, its end time is now set when the query releases its admission control resources. With no dedicated coordinator, the end time is set on un-registration.

- [IMPALA-5474](#) - Fixed an issue where adding a trivial subquery to a query with an error turns the error into a warning.
- [IMPALA-6521](#) - When set, experimental flags are now shown in /varz in web UI and log files.
- [IMPALA-6900](#) - INVALIDATE METADATA operation is no longer ignored when HMS is empty.
- [IMPALA-7446](#) - Impala enables buffer pool garbage collection when near process memory limit to prevent queries from spilling to disk earlier than necessary.
- [IMPALA-7659](#) - In COMPUTE STATS, Impala counts the number of NULL values in a table
- [IMPALA-7857](#) - Logs more information about StateStore failure detection.
- [IMPALA-7928](#) - To increase the efficiency of the HDFS file handle cache, remote reads for a particular file are scheduled to a consistent set of executor nodes.
- [IMPALA-7929](#) - Impala query on tables created via Hive and mapped to HBase failed with an internal exception because the qualifier of the HBase key column is null in the mapped table. Impala relaxed the requirement and allows a NULL qualifier.
- [IMPALA-7960](#) - Impala now returns a correct result when comparing TIMESTAMP to a string literal in a binary predicate where the TIMESTAMP is casted to VARCHAR of smaller length.
- [IMPALA-7961](#) - Fixed an issue where queries running with the SYNC_DDL query option can fail when the Catalog Server is under a heavy load with concurrent catalog operations of long-running DDLs.
- [IMPALA-8026](#) - Impala query profile now reports correct row counts for all nested loop join modes.
- [IMPALA-8061](#) - Impala correctly initializes S3_ACCESS_VALIDATED variable to zero when TARGET_FILESYSTEM=3.
- [IMPALA-8154](#) - Disabled the Kerberos auth_to_local setting to prevent connection issues between impalads.
- [IMPALA-8188](#) - Impala now correctly detects an NVME device name and handles it.
- [IMPALA-8245](#) - Added hostname to the timeout error message to enable the user to easily identify the host which has reached a bad connection state with the HDFS NameNode.
- [IMPALA-8254](#) - COMPUTE STATS failed if COMPRESSION_CODEC is set.

Apache Kafka

The following issues are fixed in CDH 6.2.0:

- [KAFKA-3514](#) - Stream timestamp computation needs some further thoughts.
- [KAFKA-4932](#) - Add support for UUID serialization and deserialization
- [KAFKA-5690](#) - Add support to list ACLs for a given principal
- [KAFKA-5975](#) - No response when deleting topics and delete.topic.enable=false
- [KAFKA-6082](#) - Fence zookeeper updates with controller epoch zkVersion
- [KAFKA-6123](#) - Give client MetricsReporter auto-generated client.id
- [KAFKA-6195](#) - Resolve DNS aliases in bootstrap.server (KIP-235)
- [KAFKA-6684](#) - Support casting Connect values with bytes schema to string
- [KAFKA-6753](#) - Updating the OfflinePartitions count only when necessary
- [KAFKA-6835](#) - Enable topic unclean leader election to be enabled without controller change
- [KAFKA-6863](#) - Kafka clients should try to use multiple DNS resolved IP
- [KAFKA-6914](#) - Set parent classloader of DelegatingClassLoader same as the worker's
- [KAFKA-6923](#) - Refactor Serializer/Deserializer for KIP-336
- [KAFKA-6926](#) - Simplified some logic to eliminate some suppressions of NPath complexity checks
- [KAFKA-6950](#) - Delay response to failed client authentication to prevent potential DoS issues (KIP-306)
- [KAFKA-6998](#) - Disable Caching when max.cache.bytes are zero.
- [KAFKA-7080](#) - and KAFKA-7222: Cleanup overlapping KIP changes
- [KAFKA-7096](#) - Clear buffered data for partitions that are explicitly unassigned by user
- [KAFKA-7117](#) - Support AdminClient API in AclCommand (KIP-332)
- [KAFKA-7134](#) - KafkaLog4jAppender exception handling with ignoreExceptions
- [KAFKA-7139](#) - Support option to exclude the internal topics in kafka-topics.sh
- [KAFKA-7196](#) - Remove heartbeat delayed operation for those removed consumers at the end of each rebalance
- [KAFKA-7211](#) - MM should handle TimeoutException in commitSync
- [KAFKA-7215](#) - Improve LogCleaner Error Handling

- [KAFKA-7223](#) - In-Memory Suppression Buffering
- [KAFKA-7240](#) - total metrics in Streams are incorrect
- [KAFKA-7277](#) - Migrate Streams API to Duration instead of longMs times
- [KAFKA-7299](#) - Batch LeaderAndIsr requests for AutoLeaderRebalance
- [KAFKA-7311](#) - Reset next batch expiry time on each poll loop
- [KAFKA-7313](#) - StopReplicaRequest should attempt to remove future replica for the partition only if future replica exists
- [KAFKA-7324](#) - NPE due to lack of SASLExtensions in SASL/OAUTHBEARER
- [KAFKA-7326](#) - KStream.print() should flush on each line for PrintStream
- [KAFKA-7332](#) - Update CORRUPT_MESSAGE exception message description
- [KAFKA-7333](#) - Protocol changes for KIP-320
- [KAFKA-7338](#) - Specify AES128 default encryption type for Kerberos tests
- [KAFKA-7366](#) - Make topic configs segment.bytes and segment.ms to take effect immediately
- [KAFKA-7379](#) - [streams] send.buffer.bytes should be allowed to set -1 in KafkaStreams
- [KAFKA-7394](#) - OffsetsForLeaderEpoch supports topic describe access
- [KAFKA-7395](#) - Add fencing to replication protocol (KIP-320)
- [KAFKA-7396](#) - Materialized, Serialized, Joined, Consumed and Produced with implicit Serdes
- [KAFKA-7399](#) - KIP-366, Make FunctionConversions deprecated
- [KAFKA-7400](#) - Compacted topic segments that precede the log start offse...
- [KAFKA-7403](#) - Use default timestamp if no expire timestamp set in offset commit value
- [KAFKA-7406](#) - Name join group repartition topics
- [KAFKA-7409](#) - Validate message format version before creating topics or altering configs
- [KAFKA-7415](#) - Persist leader epoch and start offset on becoming a leader
- [KAFKA-7428](#) - ConnectionStressSpec: add "action", allow multiple clients
- [KAFKA-7429](#) - Enable key/truststore update with same filename/password
- [KAFKA-7437](#) - Persist leader epoch in offset commit metadata
- [KAFKA-7439](#) - Replace EasyMock and PowerMock with Mockito in clients module
- [KAFKA-7441](#) - Allow LogCleanerManager.resumeCleaning() to be used concurrently
- [KAFKA-7456](#) - Serde Inheritance in DSL
- [KAFKA-7462](#) - Make token optional for OAuthBearerLoginModule
- [KAFKA-7464](#) - catch exceptions in "leaderEndpoint.close()" when shutting down ReplicaFetcherThread
- [KAFKA-7467](#) - NoSuchElementException is raised because controlBatch is empty
- [KAFKA-7475](#) - capture remote address on connection authentication errors, and log it
- [KAFKA-7476](#) - Fix Date-based types in SchemaProjector
- [KAFKA-7477](#) - Improve Streams close timeout semantics
- [KAFKA-7481](#) - Add upgrade/downgrade notes for 2.1.x
- [KAFKA-7482](#) - LeaderAndIsrRequest should be sent to the shutting down broker
- [KAFKA-7483](#) - Allow streams to pass headers through Serializer.
- [KAFKA-7496](#) - Handle invalid filters gracefully in KafkaAdminClient#describeAcls
- [KAFKA-7498](#) - Remove references from `common.requests` to `clients`
- [KAFKA-7501](#) - Fix producer batch double deallocation when receiving message too large error on expired batch
- [KAFKA-7505](#) - Process incoming bytes on write error to report SSL failures
- [KAFKA-7519](#) - Clear pending transaction state when expiration fails
- [KAFKA-7532](#) - Clean-up controller log when shutting down brokers
- [KAFKA-7534](#) - Error in flush calling close may prevent underlying store from closing
- [KAFKA-7535](#) - KafkaConsumer doesn't report records-lag if isolation.level is read_committed
- [KAFKA-7560](#) - PushHttpMetricsReporter should not convert metric value to double
- [KAFKA-7742](#) - Fixed removing hmac entry for a token being removed from DelegationTokenCache

Apache Kudu

The following issues are fixed in CDH 6.2.0:

- The Kudu Python client now detects and reports on conflicting/incorrect initialization of the OpenSSL library to avoid glitches and undefined behavior.
- [KUDU-1678](#) - Fixed a crash caused by a race condition between altering tablet schemas and deleting tablet replicas.
- [KUDU-2680](#) - Now the `kudu fs update_dirs` tool can correctly remove directories in the presence of tablet tombstones.
- [KUDU-2195](#) - Now you can use the `--meta_force_fsync` flag to fsync Kudu's consensus metadata more aggressively. Setting this to `true` may decrease Kudu's performance, but will improve its durability in the face of power failures and forced shutdowns.
- [KUDU-2684](#) - Fixed an issue that would cause an excessive amount of RPC traffic from Kudu masters if the tablet servers were configured with duplicated master addresses.
- [KUDU-2688](#) - Fixed an issue that would cause the `kudu cluster rebalance` tool to run indefinitely in the case of tables with a replication factor of 2.
- [KUDU-2690](#) - Fixed an issue that could lead to a failure to bootstrap tablet replicas that were a part of workloads with many alter table operations.
- [KUDU-2710](#) - Fixed an issue with the Java scanner's `keepAlive` that could lead to a permanent hang in the scanner.
- [KUDU-2706](#) - Fixed an issue that would cause undefined behavior upon connecting to a secure cluster concurrently from multiple C++ clients.

Apache Oozie

The following issues are fixed in CDH 6.2.0:

- [OOZIE-1393](#) - Allow sending emails via TLS
- [OOZIE-2211](#) - Remove `OozieCLI#validateCommandV41`
- [OOZIE-2339](#) - [fluent-job] Minimum Viable Fluent Job API
- [OOZIE-2352](#) - Unportable shebang in shell scripts
- [OOZIE-2494](#) - Cron syntax not handling DST properly
- [OOZIE-2684](#) - Bad database schema error for `WF_ACTIONS` table
- [OOZIE-2718](#) - Improve `-dryrun` for bundles
- [OOZIE-2791](#) - ShareLib installation may fail on busy Hadoop clusters
- [OOZIE-2826](#) - Upgrade `joda-time` to 2.9.9
- [OOZIE-2829](#) - Improve `sharelib` upload to accept multiple source folders
- [OOZIE-2937](#) - Remove redundant `groupId` from the child POMs
- [OOZIE-2942](#) - [examples] Fix Findbugs warnings
- [OOZIE-2949](#) - Fix and backport `Escape` quotes whitespaces in `Sqoop <command>` field
- [OOZIE-3109](#) - [log-streaming] Escape HTML-specific characters
- [OOZIE-3134](#) - Potential inconsistency between the in-memory SLA map and the Oozie database
- [OOZIE-3155](#) - [ui] Job DAG is not refreshed when a job is finished
- [OOZIE-3156](#) - Retry SSH action check when cannot connect to remote host
- [OOZIE-3160](#) - `PriorityDelayQueue put()/take()` can cause significant CPU load due to busy waiting
- [OOZIE-3178](#) - `/bin/mkdistro.sh -Papache-release` fails due to javadoc errors
- [OOZIE-3185](#) - Upgrade `org.apache.derby` to 10.11.1.1
- [OOZIE-3193](#) - Applications are not killed when submitted via `subworkflow`
- [OOZIE-3208](#) - "It should never happen" error messages should be more specific to root cause
- [OOZIE-3209](#) - XML schema error when submitting `pyspark` example
- [OOZIE-3210](#) - [build] Revision information is empty
- [OOZIE-3219](#) - Cannot compile with `hadoop 3.1.0`
- [OOZIE-3224](#) - Upgrade `Jetty` to 9.3
- [OOZIE-3227](#) - Eliminate duplicate dependencies when using `Hadoop 3 DistributedCache`
- [OOZIE-3229](#) - [client] [ui] Improved SLA filtering options
- [OOZIE-3233](#) - Remove DST shift from the coordinator job's end time

- [OOZIE-3235](#) - Upgrade ActiveMQ to 5.15.3
- [OOZIE-3260](#) - [sla] Remove stale item above max retries on JPA related errors from in-memory SLA map
- [OOZIE-3278](#) - Oozie fails to start with Hadoop 2.6.0
- [OOZIE-3297](#) - Retry logic does not handle the exception from BulkJPAExecutor properly
- [OOZIE-3298](#) - [MapReduce action] External ID is not filled properly and failing MR job is treated as SUCCEEDED
- [OOZIE-3303](#) - Oozie UI does not work after Jetty 9.3 upgrade
- [OOZIE-3304](#) - Parsing sharelib timestamps is not threadsafe
- [OOZIE-3307](#) - [core] Limit heap usage of LauncherAM
- [OOZIE-3309](#) - Runtime error during /v2/sla filtering for bundle
- [OOZIE-3310](#) - SQL error during /v2/sla filtering
- [OOZIE-3330](#) - [spark-action] Remove double quotes inside plain option values
- [OOZIE-3331](#) - [spark-action] Inconsistency while parsing quoted Spark options
- [OOZIE-3334](#) - Don't use org.apache.hadoop.hbase.security.User in HDFSCredentials
- [OOZIE-3340](#) - [fluent-job] Create error handler ACTION only if needed
- [OOZIE-3348](#) - [Hive action] Remove dependency hive-contrib
- [OOZIE-3354](#) - [core] [SSH action] SSH action gets hung
- [OOZIE-3369](#) - [core] Upgrade guru.nidi:graphviz-java to 0.7.0
- [OOZIE-3370](#) - Property filtering is not consistent across job submission
- [OOZIE-3389](#) - Getting input dependency list on the UI throws NPE
- [OOZIE-3390](#) - [Shell action] STDERR contains a bogus error message
- [OOZIE-3400](#) - [core] Fix PurgeService sub-sub-workflow checking

Apache Parquet

The following issues are fixed in CDH 6.2.0:

- [PARQUET-196](#) - parquet-tools command for row count & size
- [PARQUET-852](#) - Slowly ramp up sizes of byte in ByteBasedBitPackingEncoder
- [PARQUET-969](#) - Decimal datatype support for parquet-tools output
- [PARQUET-1336](#) - PrimitiveComparator should implements Serializable
- [PARQUET-1407](#) - Avro: Fix binary values returned from dictionary encoding
- [PARQUET-1421](#) - InternalParquetRecordWriter logs debug messages at the INFO level
- [PARQUET-1440](#) - Parquet-tools: Parse int32 or int64 decimal values to big decimals with the proper scale
- [PARQUET-1472](#) - Parquet-tools: Parse int32 or int64 decimal values to big decimals with the proper scale
- [PARQUET-1475](#) - Fix lack of cause propagation in DirectCodecFactory.ParquetCompressionCodecException
- [PARQUET-1510](#) - Fix notEq for optional columns with null values
- [PARQUET-1527](#) - [parquet-tools] cat command throw java.lang.ClassCastException

Apache Pig

There are no notable fixed issues in this release.

Cloudera Search

The following issues are fixed in CDH 6.2.0:

- [SOLR-2834](#) - Handle CharacterFilters in Solr
- [SOLR-8207](#) - Collections with underscores in name no longer cause a crash the Cloud->Nodes UI
- [SOLR-8207](#) - Add "Nodes" view to the Admin UI "Cloud" tab, listing nodes and key metrics
- [SOLR-8207](#) - Nodes view support for shard_1_1_1 format and replica1, replica_1 format. Show core state in label if not 'active'
- [SOLR-12570](#) - OpenNLPExtractNamedEntitiesUpdateProcessor cannot support multi fields because pattern replacement doesn't work correctly
- [SOLR-12597](#) - Migrate API should fail requests that do not specify split.key parameter
- [SOLR-12649](#) - CloudSolrClient retries requests unnecessarily exception from server

- [SOLR-12670](#) - RecoveryStrategy logs wrong wait time when retrying recovery
- [SOLR-12679](#) - MiniSolrCloudCluster.stopJettySolrRunner should remove jetty from the internal list
- [SOLR-12679](#) - MiniSolrCloudCluster.startJettySolrRunner method should not add a duplicate jetty instance to the list
- [SOLR-12770](#) - Make it possible to configure a host whitelist for distributed search
- [SOLR-12776](#) - Setting of TMP in solr.cmd causes invisibility of Solr to JDK tools

Apache Sentry

The following issues are fixed in CDH 6.2.0:

- [SENTRY-1797](#) - SentryKerberosContext should use periodic executor instead of managing periodic execution via run() method.
- [SENTRY-2329](#) - Integrate sentry with Hadoop 3.1.1
- [SENTRY-2372](#) - SentryStore should not implement grantOptionCheck
- [SENTRY-2428](#) - Skip null partitions or partitions with null sds entries
- [SENTRY-2437](#) - When granting privileges a single transaction per grant causes long delays
- [SENTRY-2441](#) - When MAuthzPathsMapping is deleted all associated MPaths should be deleted automatically..
- [SENTRY-2477](#) - When requesting for deltas check if nn seq num is 1 more than latest sequence num
- [SENTRY-2488](#) - Add privilege cache to sentry hive bindings in DefaultAccessValidator
- [SENTRY-2490](#) - When building a full perm update for each object we only build 1 privilege per role
- [SENTRY-2492](#) - Consecutive ALL grants get deleted when multiple roles have ALL grants on that object
- [SENTRY-2493](#) - Sentry store api's for path mapping should handle empty/null paths.
- [SENTRY-2497](#) - show grant role results should handle case where URI doesn't have a defined scheme.
- [SENTRY-2498](#) - Exception while deleting paths that does't exist
- [SENTRY-2500](#) - CREATE on server does not provide HMS server side read authorization for get_all_tables(database_name)
- [SENTRY-2502](#) - Sentry NN plug-in stops fetching updates from sentry server.
- [SENTRY-2503](#) - Failed to revoke the privilege from impala-shell if the privilege added from beeline cli on multi-clusters

Apache Spark

The following issues are fixed in CDH 6.2.0:

- [SPARK-22148](#) - [SPARK-15815][SCHEDULER] Acquire new executors to avoid hang because of blacklisting
- [SPARK-23257](#) - [K8S] Kerberos Support for Spark on K8S
- [SPARK-23781](#) - [CORE] Merge token renewer functionality into HadoopDelegationTokenManager.
- [SPARK-23831](#) - Revert "[SQL] Add org.apache.derby to IsolatedClientLoader"
- [SPARK-24434](#) - [K8S] pod template files
- [SPARK-24553](#) - [UI][FOLLOWUP][2.4 BACKPORT] Fix unnecessary UI redirect
- [SPARK-24920](#) - [CORE] Allow sharing Netty's memory pool allocators
- [SPARK-24958](#) - [CORE] Add memory from procs to executor metrics.
- [SPARK-25003](#) - [PYSPARK] Use SessionExtensions in Pyspark
- [SPARK-25023](#) - Clarify Spark security documentation
- [SPARK-25118](#) - [CORE] Persist Driver Logs in Client mode to Hdfs
- [SPARK-25222](#) - [K8S] Improve container status logging
- [SPARK-25451](#) - [SPARK-26100][CORE] Aggregated metrics table doesn't show the right number of the total tasks
- [SPARK-25501](#) - [SS] Add kafka delegation token support.
- [SPARK-25515](#) - [K8S] Adds a config option to keep executor pods for debugging
- [SPARK-25560](#) - [SQL] Allow FunctionInjection in SparkExtensions
- [SPARK-25682](#) - [K8S] Package example jars in same target for dev and distro images.
- [SPARK-25689](#) - [CORE] Follow up: don't get delegation tokens when kerberos not available.
- [SPARK-25689](#) - [YARN] Make driver, not AM, manage delegation tokens.

- [SPARK-25730](#) - [K8S] Delete executor pods from kubernetes after figuring out why they died
- [SPARK-25745](#) - [K8S] Improve docker-image-tool.sh script
- [SPARK-25778](#) - WriteAheadLogBackedBlockRDD in YARN Cluster Mode Fails ...
- [SPARK-25786](#) - [CORE] If the ByteBuffer.hasArray is false , it will throw UnsupportedOperationException for Kryo
- [SPARK-25815](#) - [K8S] Support kerberos in client mode, keytab-based token renewal.
- [SPARK-25828](#) - [K8S] Bumping Kubernetes-Client version to 4.1.0
- [SPARK-25837](#) - [CORE] Fix potential slowdown in AppStatusListener when cleaning up stages
- [SPARK-25875](#) - [K8S] Merge code to set up driver command into a single step.
- [SPARK-25876](#) - [K8S] Simplify kubernetes configuration types.
- [SPARK-25877](#) - [K8S] Move all feature logic to feature classes.
- [SPARK-25905](#) - [CORE] When getting a remote block, avoid forcing a conversion to a ChunkedByteBuffer
- [SPARK-25922](#) - [K8] Spark Driver/Executor "spark-app-selector" label mismatch
- [SPARK-25957](#) - [K8S] Make building alternate language binding docker images optional
- [SPARK-25960](#) - [K8S] Support subpath mounting with Kubernetes
- [SPARK-26002](#) - [SQL] Fix day of year calculation for Julian calendar days
- [SPARK-26011](#) - [SPARK-SUBMIT] Yarn mode pyspark app without python main resource does not honor "spark.jars.packages"
- [SPARK-26029](#) - [BUILD][2.4] Bump previousSparkVersion in MimaBuild.scala to be 2.3.0
- [SPARK-26094](#) - [CORE][STREAMING] createNonEcFile creates parent dirs.
- [SPARK-26109](#) - [WEBUI] Duration in the task summary metrics table and the task table are different
- [SPARK-26119](#) - [CORE][WEBUI] Task summary table should contain only successful tasks' metrics
- [SPARK-26186](#) - [SPARK-26184][CORE] Last updated time is not getting updated for the Inprogress application
- [SPARK-26194](#) - [K8S] Auto generate auth secret for k8s apps.
- [SPARK-26201](#) - Fix python broadcast with encryption
- [SPARK-26219](#) - [CORE][BRANCH-2.4] Executor summary should get updated for failure jobs in the history server UI
- [SPARK-26236](#) - [SS] Add kafka delegation token support documentation.
- [SPARK-26239](#) - File-based secret key loading for SASL.
- [SPARK-26256](#) - [K8S] Fix labels for pod deletion
- [SPARK-26267](#) - [SS] Retry when detecting incorrect offsets from Kafka
- [SPARK-26304](#) - [SS] Add default value to spark.kafka.sasl.kerberos.service.name parameter
- [SPARK-26307](#) - [SQL] Fix CTAS when INSERT a partitioned table using Hive serde
- [SPARK-26322](#) - [SS] Add spark.kafka.sasl.token.mechanism to ease delegation token configuration.
- [SPARK-26493](#) - [SQL] Allow multiple spark.sql.extensions
- [SPARK-26592](#) - [SS] Throw exception when kafka delegation token tried to obtain with proxy user
- [SPARK-26595](#) - [CORE] Allow credential renewal based on kerberos ticket cache.
- [SPARK-26694](#) - [CORE] Progress bar should be enabled by default for spark-shell
- [SPARK-26726](#) - Synchronize the amount of memory used by the broadcast variable to the UI display
- [SPARK-26745](#) - [SPARK-24959][SQL][BRANCH-2.4] Revert count optimization in JSON datasource by
- [SPARK-26753](#) - [CORE] Fixed custom log levels for spark-shell by using Filter instead of Threshold
- [SPARK-26873](#) - [SQL] Use a consistent timestamp to build Hadoop Job IDs.

Apache Sqoop

The following issues are fixed in CDH 6.2.0:

- [SQOOP-3237](#) - Mainframe FTP transfer option to insert custom FTP commands prior to transfer
- [SQOOP-3382](#) - Add parquet numeric support for Parquet in hdfs import
- [SQOOP-3396](#) - Add parquet numeric support for Parquet in Hive import

Apache Zookeeper

There are no notable fixed issues in this release.

Unsupported Features in CDH 6.2.0

This page lists the unsupported features in CDH 6.2.x. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.2.0](#) on page 872.

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 835
- [YARN Unsupported Features](#) on page 835

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.x:

- ACLs for the NFS gateway ([HADOOP-11004](#))
- Aliyun Cloud Connector ([HADOOP-12756](#))
- Allow HDFS block replicas to be provided by an external storage system ([HDFS-9806](#))
- Consistent standby Serving reads ([HDFS-12943](#))
- HDFS Router Based Federation ([HDFS-10467](#))
- More than two NameNodes ([HDFS-6440](#))
- NameNode Federation ([HDFS-1052](#))
- Openstack Swift ([HADOOP-8545](#))
- SFTP FileSystem ([HADOOP-5732](#))
- Storage policy satisfier ([HDFS-10285](#))
- Upgrade Domain ([HDFS-7541](#))

YARN Unsupported Features

The following YARN features are not supported in CDH 6.2.x:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers
- Distributed Scheduling
- Docker on YARN (DockerContainerExecutor)
- Native Services
- New Aggregated Log File Format
- Node Labels
- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Estimator Service
- Resource Profiles
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.2.x:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction

- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation
- Client tarball
- Rolling upgrade from CDH 5 HBase versions

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.2.x:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution

- Hive Metastore - Derby
- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))
- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka features are not supported in CDH 6.2.x:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.
- Idempotent and transactional capabilities in the producer are currently an unsupported beta feature given their maturity and complexity. This feature will be supported in a future release.
- Kafka Connect is included in CDH 6.2.x, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- Kafka Streams is included in CDH 6.2.x, but is not supported. Instead, use Spark and Spark Streaming have a fully functional ETL/stream processing pipeline. See [Using Kafka with Apache Spark Streaming for Stream Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.2.x, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.2.x:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.2.x:

- Pig on Tez is not supported in CDH 6.1.x ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.2.x:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.2.x:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

([Known Issue](#))

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.x, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.2.x:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)
- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is supported, but the following features of it *are not*:
 - Continuous processing, which is still experimental, is not supported
 - Stream static joins with HBase have not been tested and therefore are not supported

- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.2.x:

- `import-mainframe`

Incompatible Changes in CDH 6.2.0



Important:

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.2.0, grouped by component:

Apache Accumulo

CDH 6.2.0 introduces no new incompatible changes for Apache Accumulo.

Apache Avro

API Changes

One method was removed in CDH 6.0.0:

```
GenericData.toString (Object datum, StringBuilder buffer)
```

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires GenericEnumSymbol - likely to break current Generic API users that often have String or Java Enum for these fields
- [AVRO-1502](#): Avro Objects now Serializable - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be HTrace
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.
- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).
- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. The only additional configuration required to use HBase2Sink is to replace the component name in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

com.google.common.collect.ImmutableMap

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

- [HDFS Incompatible Changes](#) on page 839
- [MapReduce](#) on page 840
- [YARN](#) on page 840

HDFS Incompatible Changes

CDH 6.2.0 introduces no new incompatible changes for HDFS.

CDH 6.1.0 introduces no new incompatible changes for HDFS.

CDH 6.0.1 introduces no new incompatible changes for HDFS.

CDH 6.0.0, introduces the following incompatible changes for HDFS:

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.
- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied

the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.

- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSClient#mkdirs` and `DFSClient#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.
- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.
 - All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.
- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0
- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.
- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0
 - asm from 3.2 to 5.0.4

MapReduce

CDH 6.2.0 introduces no new incompatible changes for MapReduce.

CDH 6.0.0, introduces the following incompatible changes:

- Support for MapReduce v1 has been dropped from CDH 6.0.0.
- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

CDH 6.2.0 introduces no new incompatible changes for YARN.

CDH 6.1.0 introduces no new incompatible changes for YARN.

CDH 6.0.1 introduces no new incompatible changes for YARN.

CDH 6.0.0 introduces no new incompatible changes for YARN.

Apache HBase

CDH 6.2.x contains the following downstream HBase incompatible change:

hbase.security.authorization

The default value for `hbase.security.authorization` has been changed from `true` to `false`. Secured clusters should make sure to explicitly set it to `true` in XML configuration file before upgrading to one of these versions ([HBASE-19483](#)). True as the default value of `hbase.security.authorization` was changed because not all clusters need authorization. (History: [HBASE-13275](#)) Rather, only the clusters which need authorization should set this configuration as `true`.

Incompatible Changes

For more information about upstream incompatible changes, see the Apache Reference Guide [Incompatible Changes](#) and [Upgrade Paths](#).

CDH 6.1.0 introduces the following incompatible changes for HBase:

- [HBASE-20270](#): Error triggered command help is no longer available.
- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.

CDH 6.0.x introduces the following upstream HBase incompatible changes:

- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.
- Public interface API changes:
 - [HBASE-15607](#): Admin
 - [HBASE-19112](#), [HBASE-18945](#): Cell
 - Region, Store, HBaseTestingUtility
- [HBASE-18792](#): hbase-2 needs to defend against hbck operations
- [HBASE-15982](#): Interface ReplicationEndpoint extends Guava's Service.
- [HBASE-18995](#): Split CellUtil into public CellUtil and PrivateCellUtil for Internal use only.
- [HBASE-19179](#): Purged the hbase-prefix-tree module and all references from the code base.
- [HBASE-17595](#): Add partial result support for small/limited scan; Now small scan and limited scan could also return partial results.
- [HBASE-16765](#): New default split policy, SteppingSplitPolicy.
- [HBASE-17442](#): Move most of the replication related classes from hbase-client to hbase-replication package.
- [HBASE-16196](#): The bundled JRuby 1.6.8 has been updated to version 9.1.9.0.
- [HBASE-18811](#): Filters have been moved from Public to LimitedPrivate.
- [HBASE-18697](#): Replaced hbase-shaded-server jar with hbase-shaded-mapreduce jar.
- [HBASE-18640](#): Moved mapreduce related classes out of hbase-server into separate hbase-mapreduce jar .
- [HBASE-19128](#): Distributed Log Replay feature has been removed.
- [HBASE-19176](#): Hbase-native-client has been removed.
- [HBASE-17472](#): Changed semantics of granting new permissions. Earlier, new grants would override previous permissions, but now, the new and existing permissions get merged.
- [HBASE-18374](#): Previous "mutate" latency metrics has been renamed to "put" metrics.
- [HBASE-15740](#): Removed Replication metric source.shippedKBs in favor of source.shippedBytes.
- [HBASE-13849](#): Removed restore and clone snapshot from the WebUI.
- [HBASE-13252](#): The concept of managed connections in HBase (deprecated before) has now been extinguished completely, and now all callers are responsible for managing the lifecycle of connections they acquire.
- [HBASE-14045](#): Bumped thrift version to 0.9.2.

- [HBASE-5401](#): Changes to number of tasks PE runs when clients are mapreduce. Now tasks == client count. Previous we hardcoded ten tasks per client instance.

Changed Behavior

CDH 6.1.x contains the following HBase behavior changes:

- [HBASE-14350](#): Assignment Manager v2 - Split/Merge have moved to the Master; it runs them now. Hooks around Split/Merge are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-18271](#): Moved to internal shaded netty.
- [HBASE-17343](#): Default MemStore to be CompactingMemStore instead of DefaultMemStore. In-memory compaction of CompactingMemStore demonstrated sizable improvement in HBase's write amplification and read/write performance.
- [HBASE-19092](#): Make Tag IA.LimitedPrivate and expose for CPs.
- [HBASE-18137](#): Replication gets stuck for empty WALs.
- [HBASE-17513](#): Thrift Server 1 uses different QOP settings than RPC and Thrift Server 2 and can easily be misconfigured so there is no encryption when the operator expects it.
- [HBASE-16868](#): Add a replicate_all flag to replication peer config. The default value is true, which means all user tables (REPLICATION_SCOPE != 0) will be replicated to peer cluster.
- [HBASE-19341](#): Ensure Coprocessors can abort a server.
- [HBASE-18469](#): Correct RegionServer metric of totalRequestCount.
- [HBASE-17125](#): Marked Scan and Get's setMaxVersions() and setMaxVersions(int) as deprecated. They are easy to misunderstand with column family's max versions, so use readAllVersions() and readVersions(int) instead.
- [HBASE-16567](#): Core is now up on protobuf 3.1.0 (Coprocessor Endpoints and REST are still on protobuf 2.5.0).
- [HBASE-14004](#): Fix inconsistency between Memstore and WAL which may result in data in remote cluster that is not in the origin (Replication).
- [HBASE-18786](#): FileNotFoundException opening a StoreFile in a primary replica now causes a RegionServer to crash out where before it would be ignored (or optionally handled via close/reopen).
- [HBASE-17956](#): Raw scans will also read TTL expired cells.
- [HBASE-17017](#): Removed per-region latency histogram metrics.
- [HBASE-19483](#): Added ACL checks to RSGroup commands - On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands.
- [HBASE-19358](#): Added ACL checks to RSGroup commands (HBASE-19483): On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands. Improved stability of splitting log when do failover.
- [HBASE-18883](#): Updated our Curator version to 4.0 - Users who experience classpath issues due to version conflicts are recommended to use either the hbase-shaded-client or hbase-shaded-mapreduce artifacts.
- [HBASE-16388](#): Prevent client threads being blocked by only one slow region server - Added a new configuration to limit the max number of concurrent request to one region server.
- [HBASE-15212](#): New configuration to limit RPC request size to protect the server against very large incoming RPC requests. All requests larger than this size will be immediately rejected before allocating any resources.
- [HBASE-15968](#): This issue resolved two long-term issues in HBase: 1) Puts may be masked by a delete before them, and 2) Major compactions change query results. Offers a new behavior to fix this issue with a little performance reduction. Disabled by default. See the issue for details and caveats.
- [HBASE-13701](#): SecureBulkLoadEndpoint has been integrated into HBase core as default bulk load mechanism. It is no longer needed to install it as a coprocessor endpoint.
- [HBASE-9774](#): HBase native metrics and metric collection for coprocessors.
- [HBASE-18294](#): Reduce global heap pressure: flush based on heap occupancy.

Apache Hive/Hive on Spark/HCatalog

Apache Hive

The following changes are introduced to Hive in CDH 6.0.0, and are not backwards compatible:

- [Change in RLIKE and REGEXP Use](#) on page 1248
- [UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting](#) on page 1248

- [Support for UNION DISTINCT](#) on page 1249
- [OFFLINE and NO_DROP Options Removed from Table and Partition DDL](#) on page 1250
- [DESCRIBE Query Syntax Change](#) on page 1250
- [CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names](#) on page 1250
- [Reserved and Non-Reserved Keyword Changes in HiveQL](#) on page 1250
- [Apache Hive API Changes in CDH 6.0.0](#) on page 1252
- [Apache Hive Configuration Changes in CDH 6.0.0](#) on page 1253
- [HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes](#) on page 1256
- [Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column](#) on page 1256
- [Hive Logging Framework Switched to SLF4J/Log4j 2](#) on page 1256
- [Deprecated Parquet Java Classes Removed from Hive](#) on page 1256
- [Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms](#) on page 1257
- [S3N Connector Is Removed from CDH 6.0](#) on page 1257
- [Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request](#) on page 1257
- [Support Added for Escaping Carriage Returns and New Line Characters for Text Files \(LazySimpleSerDe\)](#) on page 1258
- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1258

Change in RLIKE and REGEXP Use

A change in Hive to improve support for multiple columns restricts how you can use RLIKE, also called REGEXP, to compare operands. `RLIKE (A, B)` is no longer supported. `A RLIKE B` continues to be supported. See [Hive-11600](#).

Changing Table File Format from ORC with the ALTER TABLE Command Not Supported in CDH 6

Changing the table file format from ORC to another file format with the ALTER TABLE command is not supported in CDH 6 (it returns an error).

UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting

Prior to this change, Hive performed implicit casts when data types from different type groups were specified in queries that use UNION ALL. For example, before CDH 6.0, if you had the two following tables:

Table "one"

```
+-----+-----+-----+
| one.col_1 | one.col_2 | one.col_3 |
+-----+-----+-----+
| 21        | hello_all | b         |
+-----+-----+-----+
```

Where `col_1` datatype is `int`, `col_2` datatype is `string`, and `col_3` datatype is `char(1)`.

Table "two"

```
+-----+-----+-----+
| two.col_4 | two.col_5 | two.col_6 |
+-----+-----+-----+
| 75.0      | abcde    | 45        |
+-----+-----+-----+
```

Where `col_4` datatype is `double`, `col_5` datatype is `varchar(5)`, and `col_6` datatype is `int`.

And you ran the following UNION ALL query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS
```

```
col_3 FROM two;
```

You received the following result set:

```
+-----+-----+-----+
|_u1.col_1|_u1.col_2|_u1.col_3|
+-----+-----+-----+
| 75.0    | abcde   | 4       |
| 21.0    | hello   | b       |
+-----+-----+-----+
```

Note that this statement implicitly casts the values from table `one` with the following errors resulting in data loss:

- `one.col_1` is cast to a double datatype
- `one.col_2` is cast to a `varchar(5)` datatype, which truncates the original value from `hello_all` to `hello`
- `one.col_3` is cast to a `char(1)` datatype, which truncates the original value from `45` to `4`

In CDH 6.0, no implicit cast is performed across different type groups. For example, `STRING`, `CHAR`, and `VARCHAR` are in one type group, and `INT`, `BIGINT`, and `DECIMAL` are in another type group, and so on. So, in CDH 6.0 and later, the above query that uses `UNION ALL`, returns an exception for the columns that contain datatypes that are not part of a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
 - The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.
- **Behavior in CDH 6:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
 - The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:
 - `ENABLE | DISABLE NO_DROP [CASCADE]`
 - `ENABLE | DISABLE OFFLINE`
 - `ALTER TABLE ... IGNORE PROTECTION`
- The following support has also been removed from the `HiveMetastoreClient` class:

The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, ``data``). *Non-reserved keywords* can be used as table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|---------|------------|------------|----------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |

START

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|----------|-----------|-----------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |
| BOOLEAN | BOTH | BY | CREATE |
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|---------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLMTIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|------------|--------|-----------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |

| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
|----------|---------------|---------|-------------|
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252
- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
    PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
```

```
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a CLOB data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like "=", "<>", and "!=" might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with CLOB data types. There is no equivalent "<>" operator that is compatible with CLOB. So there is no equivalent operator for the above example that uses the "<>" inequality operator. The equivalent for "=" is the LIKE operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253
- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(hive.server2.enable.impersonation\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to false, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to true. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is |

| Value Name | Description |
|------------|---|
| | run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.
3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned table but do not filter on the partition column. | <code>false</code> |
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)
- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (`hive.server2.enable.impersonation`) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`
 - **Description:** Sets the file format in which a query's intermediate results are stored.
3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:

```
org.apache.hive.service.cli.thrift
```

To the following *new* namespace:

```
org.apache.hive.service.rpc.thrift
```

- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale of 5, the value returned for zero was returned as 0. *Now*, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the `INPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat` and set the `OUTPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`

- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanup(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|--|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |
| REF_GENERATION | Specifies how values in the <code>SELF_REFERENCING_COL_NAME</code> column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the `SerDe` property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, `'r'` or `'n'` cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the [LazySerDeParameters class](#). For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

There are no incompatible changes in this release.

Apache Impala

Port Change for SHUTDOWN Command

The `SHUTDOWN` command for shutting down a remote server used the backend port in CDH 6.1. Starting in CDH 6.2, the command uses the KRPC port, e.g. `:shutdown('host100:27000')`.

Apache Kafka

Incompatible Changes Introduced in CDH 6.2.0



Warning: Kafka in CDH 6.2.0 is based on Apache Kafka 2.1.0, which contains a change to the internal schema used to store consumer offsets. As a result of this change, downgrading Kafka to a version lower than CDH 6.2.0 is **NOT** possible once Kafka has been upgraded to CDH 6.2.0 or higher.

Default Behaviour Changes

Kafka CDH 6.2.0. Introduces the following default behaviour changes:

- Unclean leader election is automatically enabled by the controller when `unclean.leader.election.enable` config is dynamically updated by using per-topic config override.
- Diagnostic data bundles collected by Cloudera Manager from now on include information on Kafka topics. The bundle includes the information exposed by the following two commands:
 - `kafka-topics --describe`
 - `kafka-topics --list`

Incompatible Changes Introduced in CDH 6.1.1

CDH 6.1.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.1.0

Scala-based Client API Removed

Scala-based clients were deprecated in a previous release and are removed as of CDH 6.1.0.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are effected:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Default Behaviour Change

[KAFKA-7050](#): The default value for `request.timeout.ms` is decreased to 30 seconds. In addition, a new logic is added that makes the `JoinGroup` requests ignore this timeout.

Incompatible Changes Introduced in CDH 6.0.1

CDH 6.0.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.0.0

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see the previous entry). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`
- `kafka.tools.ExportZkOffset`
- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- `GroupCoordinatorNotAvailableException`
- `GroupLoadInProgressException`
- `NotCoordinatorForGroupException`
- `kafka.common.KafkaStorageException`

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Apache Kudu

There are no incompatible changes in this release.

Apache Oozie

There are no incompatible changes in this release.

*Apache Parquet***Packages and Group ID Renamed**

As a part of the Apache incubation process, all Parquet packages and the project's group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|----------------------------|
| Java Package Names | parquet.* | org.apache.parquet.* |
| Group ID | com.twitter | org.apache.parquet |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update *.java files:

| Before | After |
|--------------------------------------|---|
| <code>import parquet.*</code> | <code>import org.apache.parquet.*</code> |

Update pom.xml:

| Before | After |
|---|--|
| <pre><dependency> <groupId> com.twitter </groupId> <version> \${parquet.version} </version> </dependency></pre> | <pre><dependency> <groupId> org.apache.parquet </groupId> <version> \${parquet.version} </version> </dependency></pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestedSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestedSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Pig

The following change is introduced to Pig in CDH 6.0 and is not a backwards compatible change. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0 JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 49: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|--|---------------------------------|---|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |
| VAR (stats) | Generates the variance of a set of values. | variance | None |
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 857. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 857. |

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|---------|
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way to filter using a logical disjunction over many values. | IN | None |

For more information about using Hive UDFs, see https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 50: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|-----------------------------|---|---|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |
| Examples: | <pre>register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); }</pre> | <pre>define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc));</pre> |

Although DataFu `StreamingQuantile` and `StreamingMedian` might appear to match Hive's `percentile_approx` function, Pig cannot consume `percentile_approx`.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 51: DataFu Functions with No Hive UDF Equivalent

| | | |
|----------------------------|-----------------------------|--------------------------------|
| AppendToBag (bags) | AssertUDF (util) | BagConcat (bags) |
| BagGroup (bags) | BagLeftOuterJoin (bags) | BagSplit (bags) |
| BoolToInt (util) | CountEach (bags) | DistinctBy (bags) |
| EmptyBagToNull (bags) | EmptyBagToNullFields (bags) | Enumerate (bags) |
| FirstTupleFromBag (bags) | HaversineDistInMiles (geo) | IntToBool (util) |
| MarkovPairs | NullToEmptyBag (bags) | PageRank (linkanalysis) |
| PrependToBag (bags) | ReservoirSample (sampling)* | ReverseEnumerate (bags) |
| SampleByKey (sampling)* | SessionCount (sessions) | Sessionize (sessions) |
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with TABLESAMPLE in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

The following changes are introduced in CDH 6.1

In CDH 6.1 Cloudera Search is rebased on Apache Solr 7.4.

Deprecations

- Enabling/disabling `autoAddReplicas` cluster-wide with the API is deprecated. Use `suspend/resume` trigger APIs with `name=".auto_add_replicas"` instead.
- In the `ReplicationHandler`, the `master.commitReserveDuration` sub-element is deprecated. Configure a direct `commitReserveDuration` element instead for use in all modes (leader, follower, cloud).

Removals

- The old Leader-In-Recovery implementation (implemented in Solr 4.9) has been removed and replaced. Solr supports rolling upgrades from old 7.x versions of Solr to future 7.x releases until the last release of the 7.x major version. This means that to upgrade to Solr 8, you will have to be on Solr 7.3 or higher.
- The throttling mechanism used to limit the rate of processed autoscaling events has been removed. This deprecates the `actionThrottlePeriodSeconds` setting in the `set-properties` command of Autoscaling API. Use the `triggerCooldownPeriodSeconds` parameter to pause event processing.
- The `RunExecutableListener` event listener was removed for security reasons. If you want to listen to events caused by updates and commits, or you want to optimize, write your own listener as native Java class as part of a Solr plugin.

For more information see the [Apache Solr 7.4 Release Notes](#).

The following changes are introduced in CDH 6.0

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.
- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

Apache Sentry contains the following incompatible change in CDH 6.0.0:

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.
- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.
- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.
Since compile-time type-safety in Python and R is not a language feature, the concept of `Dataset` does not apply to these languages' APIs. Instead, `DataFrame` remains the primary programming abstraction.
- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

CDH 6.2.0 introduces no new incompatible changes for Apache Sqoop.

The following changes are introduced in CDH 6.0, and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0. Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a CHAR or VARCHAR column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to true to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPSWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with `hcatalog` jobs or when `hive import` with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile
format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with `--hcatalog-table <HIVE_VIEW>`

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the `--hcatalog-table` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table"
--hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using EscapeUtils. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySQL after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of `--input-null-string` and `--input-null-non-string` options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using `--direct` connector and a MySQL database

The MySQL direct connector does not support the `--null-string`, `--null-non-string`, `--input-null-string`, and `--input-null-non-string` options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

There are no incompatible changes in this release.

Timezone Names Unsupported in Impala in CDH 6.2.0

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|------------|-------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |

| | |
|--|--------------------------------|
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |

| | |
|------------------------------|----------------------|
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |

| | |
|-------------------------------|------------------------------|
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |

| | |
|--|-------------------|
| FJST | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |

| | |
|-------------------------------|-------------------|
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |

| | |
|--------------------------------|----------------------|
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |

| | |
|----------------------------|-------------------|
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |

| | |
|---------------------------------|----------------------|
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |

| | |
|-----------------------------|------------------------|
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |
| Srednekolymk Time | Asia/Srednekolymk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |

| | |
|---------------------|--------------------|
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |

| | |
|-------------------------------|--------------------|
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.2.0

The following sections describe the known issues in CDH 6.2.0, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-1000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.



Important: If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can work around the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|----------------------------------|---|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.
5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
10. Click **Save Changes**.
11. Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.

10 Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|-----------------------|---|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

(1) Ensure that the kernel is up to date.

- **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
- **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
- **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

There are no notable known issues in this release of Apache Accumulo.

Apache Crunch Known Issues

Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

Apache Flume Known Issues

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to false.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x
- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

Error when executing Java classes from a CDH cluster running on Ubuntu 18

Using the hadoop command-line interface for executing Java classes that are not in the default package results in error messages similar to the following:

```
#hadoop org.apache.hadoop.conf.Configuration
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.0.p0.914039/bin/./lib/hadoop/libexec//hadoop-functions.sh:
line 2366: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_USER: bad substitution
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.x.p0.914039/bin/./lib/hadoop/libexec//hadoop-functions.sh:
line 2331: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_USER: bad substitution
/opt/cloudera/parcels/CDH-6.2.0-1.cdh6.2.x.p0.914039/bin/./lib/hadoop/libexec//hadoop-functions.sh:
line 2426: HADOOP_ORG.APACHE.HADOOP.CONF.CONFIGURATION_OPTS: bad substitution
```

This issue occurs only in CDH 6.2 clusters running on Ubuntu 18 and the error messages can be safely ignored.

Workaround: Run the java command directly using `hadoop classpath` to get the classpath. For example, instead of `hadoop org.apache.hadoop.conf.Configuration`, you can run `java -cp `hadoop classpath` org.apache.hadoop.conf.Configuration`.

Affected Versions: CDH 6.2.0

Fixed Versions: CDH 6.2.1

Apache Issue: [HADOOP-16167](#)

HDFS

Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH
- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x

- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.
- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

HDFS Snapshot corruption

A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Products affected: HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0 - 6.2.1, 6.3.0, 6.3.1, 6.3.2

Users affected: Any clusters with HDFS Snapshots enabled

Impact: A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Standby NameNode detects the inconsistent snapshot data structure and shuts itself down. To recover from this situation, the fsimage must be repaired and put back into both NameNodes' fsimage directory for the Standby NameNode

to start normally. The Active NameNode stays up. However no fsimage checkpoint is performed because the Standby NameNode is down.

This problem can also prevent snapshots from being deleted or files within snapshots being listed. The following is an example of a typical error:

```
hdfs dfs -deleteSnapshot /path snapshot_123
deleteSnapshot: java.lang.IllegalStateException
```

The recovery of the corrupt fsimage can result in the loss of snapshots.

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: Alternatively, avoid using snapshots. Cloudera BDR uses snapshots automatically when the relevant directories are snapshottable. Hence, we strongly recommend avoiding the upgrade to the affected releases if you are using BDR. For information and instructions, see [Enabling and Disabling HDFS Snapshots](#).

Addressed in release/refresh/patch: CDH 6.3.3

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-390: HDFS Snapshot corruption](#)

OIV ReverseXML processor fails

The HDFS OIV ReverseXML processor fails if the XML file contains escaped characters.

Affected Versions: CDH 6.x

Apache Issue: [HDFS-12828](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:
 - Install CDH using Cloudera Manager; *or*
 - Start the NFS gateway as root; *or*
 - [Start the NFS gateway without using packages](#); *or*
 - You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the portmap.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to 777 on .snapshot directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

Permissions for `dfs.namenode.name.dir` incorrectly set

Hadoop daemons should set permissions for the `dfs.namenode.name.dir` (or `dfs.name.dir`) directories to `drwx-----` (700), but in fact these permissions are set to the file-system default, usually `drwxr-xr-x` (755).

Workaround: Use `chmod` to set permissions to 700.

Affected Versions: All CDH versions

Apache Issue: [HDFS-2470](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
java.lang.NullPointerException at
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler

- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

NodeManager fails because of the changed default location of container executor binary

The default location of container-executor binary and .cfg files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`. Because of this change, if you did not have the mount options `-noexec` and `-nosuid` set on `/opt`, the NodeManager can fail to start up as these options are set on `/var`.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the `-noexec` and `-nosuid` mount options on `/var` or change the container-executor binary and .cdf path using the `CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR` environment variable.

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, Enable Fair Scheduler Continuous Scheduler is turned off by default.

Workaround: Turn off `Enable Fair Scheduler Continuous Scheduling` in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on `Fair Scheduler Assign Multiple Tasks`.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated `mapred-site.xml` that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

GPU and Custom Resource Types Are Not Added to the YARN Client's Configuration File When Enabled

When GPU or other custom resource type is configured in Cloudera Manager, the appropriate resource (for example `yarn.io/gpu`) is not added to the YARN client's configuration (`yarn-site.xml`) file. As a result, jobs that use GPU or the configured custom resource type will fail.

Workaround: Add the appropriate resource manually to the **YARN Client Advanced Configuration Snippet (Safety Valve) for `yarn-site.xml`**:

1. In Cloudera Manager select YARN service and go to **Configuration**.
2. Search for *YARN Client Advanced Configuration Snippet (Safety Valve) for `yarn-site.xml`*
3. Add the following snippet:

```
<property>
<name>yarn.resource-types</name>
<value>yarn.io/gpu</value>
</property>
```

Affected Versions: CDH 6.2.0

Cloudera Issue: OPSAPS-49507

GPU or Custom Resource Type User Jobs can Fail After Recovery

When a GPU or other custom resource goes offline when it has containers that use that particular resource and they have not reached completion, after the restart the application will start to recover. However, if the resource is not available anymore the job that uses that resource will fail.

Workaround: N/A

Affected Versions: CDH 6.2.0, CDH 6.3.0

Cloudera Issue: CDH-77649

NodeManager Fails if GPU Use Is Enabled without any Configured GPU

When **Enable GPU Usage** is enabled for a NodeManager and there is no properly configured GPU device in that node, the NodeManager will not start.

Workaround: Disable **Enable GPU Usage** for that NodeManager in Cloudera Manager.

Affected Versions: CDH 6.2.0, CDH 6.3.0

Apache Issue: [YARN-9217](#)

Apache HBase Known Issues

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.
2. Find the **Enable Audit Collection** property and clear it.
3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x
- HDP 3.1.5
- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.

- If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:
 - Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
 - At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x
- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for `hbase-site.xml` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom hbase-site →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each `RegionServer` under the `RegionServer/Server JMX` metrics endpoint. When short circuit reads are not enabled, this metric will be zero. When short circuit reads are enabled and the data locality for this `RegionServer` is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Default limits for `PressureAwareCompactionThroughputController` are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP
- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4
- **Workaround:**
 - Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
 - An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

Data loss with restore snapshot

The restore snapshot command causes data loss when the target table was split or truncated after snapshot creation.

Products affected: HBase

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0
- CDH 6.3.0

User affected: Users relying on Restore Snapshot functionality.

Impact: Restored table could have missing data when split or truncate happened after snapshot creation.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not use Restore Snapshot. The same functionality can be achieved if the table is deleted and Clone Snapshot is used instead of restoring a table's state to the snapshot.

```
hbase> disable 'table'
hbase> drop 'table'
hbase> clone_snapshot 'snapshot_name', 'table'
hbase> enable 'table'
```

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-379: Data loss with restore snapshot](#)

CDH users must not use Apache HBase's OfflineMetaRepair tool

OfflineMetaRepair helps you to rebuild the HBase meta table from the underlying file system. This tool is often used to correct meta table corruption or loss. It is designed to work only with hbase-1.x (CDH 5.x). Users must not run the OfflineMetaRepair tool against CDH 6.x since it uses hbase-2.x. If a user runs OfflineMetaRepair tool in CDH 6.x, then it will break or corrupt the HBase meta table.

If you have already corrupted your meta table or you believe your meta table requires the use of something like the former OfflineMetaRepair tool, do not attempt any further changes, contact Cloudera Support.

Products affected: CDH

Releases affected:

- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0
- CDH 6.3.0

User affected: Clusters with HBase installed.

Impact: Cluster becomes inoperable.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not run OfflineMetaRepair tool.

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-376: CDH users must not use Apache HBase's OfflineMetaRepair tool](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a DataNode can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different DataNodes, meaning that there will be one RegionServer per DataNode per HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

IntegrationTestReplication fails if replication does not finish before the verify phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

ExportSnapshot or DistCp operations may fail on the Amazon s3a:// protocol

`ExportSnapshot` or `DistCP` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO later. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

Export to Azure Blob Storage (the `wasb://` or `wasbs://` protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController postOperation problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive/HCatalog/Hive on Spark/Hive Metastore Known Issues

This topic contains:

- [Hive Known Issues](#)
- [HCatalog Known Issues](#)
- [Hive on Spark Known Issues](#)
- [Hive Metastore Known Issues](#) on page 891

Hive Known Issues

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.

- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Query with an empty WHERE clause problematic if vectorization is off

Specific WHERE clauses cause problems if vectorization is off. For example,

```
SELECT COUNT (DISTINCT cint) FROM alltypesorc WHERE cstring1;
SELECT 1 WHERE 1;
```

If vectorization is turned on and no rules turn off the vectorization, queries run as expected.

Workaround: Rewrite queries with casts or equals.

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-15408](#)

Cloudera Issue: CDH-81649

Query with DISTINCT can fail if vectorization is on

A query can fail when vectorization is turned on, the query contains DISTINCT, and other rules do not turn off the vectorization. A query-specific error message appears, for example:

```
Error: Error while compiling statement: FAILED: SemanticException
org.apache.hadoop.hive.ql.metadata.HiveException: The column KEY._col2:0._col0 is not
in the vectorization context column map {KEY._col0=0, KEY._col1=1, KEY._col2=2}.
(state=42000,code=40000)
```

Workaround: Turn off vectorization for such queries as follows:

```
set hive.vectorized.execution.enabled=false;
```

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-19032](#)

Cloudera Issue: CDH-81341

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: Arithmetic exception [divide by] 0. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the SELECT clause on large values in columns with the data type of BIGINT might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are BIGINT data types in the SELECT clause of the query, incorrect results might be returned. Comparison operators include `==`, `!=`, `<`, `<=`, `>`, and `>=`. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference

of values in such columns is out of range for a `LONG` (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 - (-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a `LONG` (64-bit) data type can hold.

Workaround: Use a `DECIMAL` type instead of `BIGINT` for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the `ORDER BY` clause is not supported for `SELECT *` queries

When column positions are specified in `ORDER BY` clauses, they are not honored for `SELECT *` queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

`ALTER PARTITION ... SET LOCATION` does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use `ALTER PARTITION ... SET LOCATION` on S3 or between S3 and HDFS. The rest of the `ALTER PARTITION` commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Commands run against an Oracle-backed metastore might fail

Commands run against an Oracle-backed Metastore fail with error:

```
javax.jdo.JDODataStoreException Incompatible data type for column TBLS.VIEW_EXPANDED_TEXT
: was CLOB (datastore),
but type expected was LONGVARCHAR (metadata). Please check that the type in the datastore
and the type specified in the MetaData are consistent.
```

This error might occur if the metastore is run on top of an Oracle database with the configuration property `datanucleus.validateColumns` set to `true`.

Workaround: Set `datanucleus.validateColumns=false` in the `hive-site.xml` configuration file.

Affected Versions: All CDH versions

Cannot create archive partitions with external HAR (Hadoop Archive) tables

`ALTER TABLE ... ARCHIVE PARTITION` is not supported on external tables.

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types `Server` and `URI` are not supported in "`SHOW GRANT ROLE roleName on OBJECT objectName`" statements

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

Logging differences create Supportability Issues

In the event you need Apache Hive support from Cloudera, the availability of logs is critical. Some CDH releases do not enable `log4j2` logging for Hive by default. Because of this, logs are not generated. Furthermore, the specified CDH releases are not configured to remove old log files to make room for new ones. This can cause the new logs to be lost. When Hive logs are missing, Support cannot troubleshoot Hive problems efficiently.

Components affected: Hive

Products affected: Hive

Releases affected:

- CDH 6.1
- CDH 6.2
- CDH 6.3

Users affected: Hive users

Severity: Medium

Impact: The absence of Hive log files causes delays in troubleshooting Hive problems.

Action required: Manually configure `log4j2` logging, and delete old log files to make room for new ones.

1. Open Cloudera Manager.
2. Select **Clusters > HIVE**.
3. Click the **Configuration** tab.
4. In the Search field, enter Hive Metastore Server Logging Advanced Configuration Snippet (Safety Valve).
5. Add the following XML to the field (or switch to Editor mode, and enter each property and its value in the fields provided).

```
<property>
  <name>rootLogger.appenderRefs</name>
  <value>root, console, DRFA, PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.name</name>
  <value>org.apache.hadoop.hive.q1.log.PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.level</name>
  <value>DEBUG</value>
</property>
<property>
  <name>appender.DRFA.filePattern</name>
  <value>${log.dir}/${log.file}.%i</value>
</property>
</property>
```

```
<name>appender.DRFA.strategy.fileIndex</name>
<value>min</value>
</property>
```

6. In the Search field, enter HiveServer2 Logging Advanced Configuration Snippet (Safety Valve).

7. Add the XML properties from step 5.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-384: Logging differences in CDH 6 create Supportability Issues](#)

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

Hive on Spark (HoS) Known Issues

A query fails with `IllegalArgumentException` Size requested for unknown type: `java.util.Collection`

An example of a query that fails due to this issue is:

```
WITH t2 AS
(SELECT array(1,2) AS c1
UNION ALL SELECT array(2,3) AS c1)
SELECT collect_list(c1)
FROM t2
```

Workaround: Create a table to store the array data.

Affected Versions: 6.3.x, 6.2.x, 6.1.x

Cloudera Issue: CDH-80169

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form "client.RpcRetryingCaller: Call exception...", then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hive Metastore Known Issues

HMS Read Authorization: `get_num_partitions_by_filter` Ignores Authorization

A user can get the number of partitions of a table regardless of the user's permissions

HMS Read Authorization: `Get_Partitions_With_Auth` Returns All Partitions in a Table When User Has Select Access to One Column

When a user does not have any privilege on that table, including access to any of its columns, then the user has no access to the table's partition metadata. If a user has select permission on any one column of a table, then the can get all metadata of the partitions for the table, including columns that the user does not have any permission on.

HMS Read Authorization: `Partition_Name_To_Vals` Is Not Protected by Read Authorization

A user can get the partition values of a valid partition name regardless of their permissions.

HMS Notifications API is Not Protected by Server Side Read Authorization

A user without any privileges cannot get metadata of a database or a table from the HMS server. However, it is possible for such a user to access the metadata changes.

Hue Known Issues

The following sections describe known issue and workaround in Hue for CDH 6.2.0:

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - *The Add Description* field in the Table schema browser does not sanitize user inputs as expected.
- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower
- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower
- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls

Issuing DDL statements using Hue's Impala editor or invoking Hue's "Refresh Cache" function in the left-side metadata browser results in Hue issuing INVALIDATE METADATA calls to the Impala service. This call is expensive and can result in a significant system impact, up to and including full system outage, when repeated in sufficient volume. This has been corrected in HUE-8882.

Components affected:

- Hue
- Impala

Products affected:

- Cloudera Enterprise 5
- Cloudera Enterprise 6

Releases affected:

- CDH 5.15.1, 5.15.2
- CDH 5.16.x
- CDH 6.1.1
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: End-users using Impala editor in Hue.

Severity: High

Impact: Users running DDL statements using the Hue Impala editor or invoking Hue’s Refresh Cache function causes INVALIDATE METADATA commands to be sent to Impala. Impala’s metadata invalidation is an expensive operation and could cause impact on the performance of subsequent queries, hence leading to the potential for significant impact on the entire cluster, including the potential for whole-system outage.

Action required:

- CDH 6.x customers: Upgrade to CDH 6.3.4 that contains the fix.
- CDH 5.x customers: Contact Cloudera Support for further assistance.

Apache issue: [HUE-8882](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls](#)

Hue Silently Disables StartTLS in LDAP Connections

There are two mechanisms to secure communication to an LDAP server. One is to use an ‘ldaps’ connection, where all traffic is encrypted inside a TLS tunnel - much like ‘https’. The other is to use ‘StartTLS’, where traffic begins unencrypted in the “ldap” protocol and then upgrades itself to a TLS connection.

If StartTLS is enabled in the Hue configuration but the ‘ldap_cert’ parameter is not configured, then Hue silently disables StartTLS.

StartTLS will not be used for synchronization or import, even if StartTLS is enabled and the ‘ldap_cert’ parameter is set.

The result is that connections that the administrator assumes to be secured, using StartTLS, are not actually secure.

CVE: CVE-2019-19146

Date/time of detection: 22nd March, 2019

Detected by: Ben Gooley, Cloudera

Severity (Low/Medium/High): 8.8 High [CVSS AV:N/AC:L/PR:N/UI:R/S:U/C:H/I:H/A:H](#)

Products affected: CDH

Releases affected:

- CDH 5.x
- CDH 6.1.0
- CDH 6.1.1
- CDH 6.2.0
- CDH 6.2.1
- CDH 6.3.0

Users affected: All users who are using StartTLS enabled in the Hue configuration when using LDAP as Authentication Backend to login in Hue.

Impact: Sensitive data exposure.

Immediate action required:

- **Upgrade (recommended):** Update to a version of CDH containing the fix.
- **Workaround:** Use “ldaps” instead of “ldap” and StartTLS.

Addressed in release/refresh/patch: CDH 6.3.1 and above

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-371: Hue Silently Disables StartTLS in LDAP Connections](#)

Invalid S3 URI error while accessing S3 bucket

The Hue Load Balancer merges the double slashes (//) in the S3 URI into a single slash (/) so that the URI prefix `"/filebrowser/view=S3A://"` is changed to `"/filebrowser/view=S3A:"`. This results in an error when you try to access the S3 buckets from the Hue File Browser through the port 8889.

The Hue web UI displays the following error: “Unknown error occurred”.

The Hue server logs record the “`ValueError: Invalid S3 URI: S3A`” error.

Workaround:

To resolve this issue, add the following property in the Hue Load Balancer Advanced Configuration Snippet:

1. Sign in to Cloudera Manager as an Administrator.
2. Go to **Clusters > Hue service > Configurations > Load Balancer** and search for the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
3. Specify `MergeSlashes OFF` in the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
4. Click **Save Changes**.
5. Restart the Hue Load Balancer.

You should be able to load the S3 browser from both 8888 and 8889 ports.

Alternatively, you can use the Hue server port 8888 instead of the load balancer port 8889 to resolve this issue.

Error while rerunning Oozie workflow

You may see an error such as the following while rerunning an already executed and finished Oozie workflow through the Hue web interface: `E0504: App directory [hdfs://cdh/user/hue/oozie/workspaces/hue-oozie-1571929263.84] does not exist.`

Workaround:

To resolve this issue, add the following property in the Hue Load Balancer Advanced Configuration Snippet:

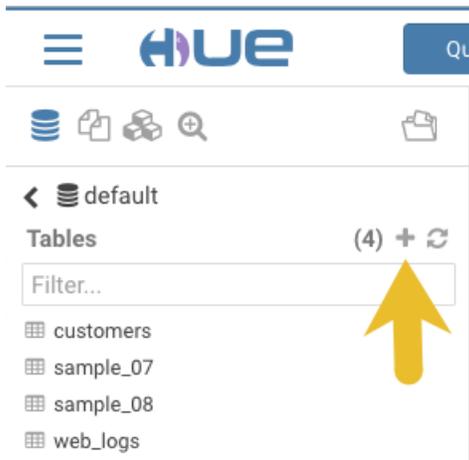
1. Sign in to Cloudera Manager as an Administrator.
2. Go to **Clusters > Hue service > Configurations > Load Balancer** and search for the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
3. Specify `MergeSlashes OFF` in the **Load Balancer Advanced Configuration Snippet (Safety Valve) for httpd.conf** field.
4. Click **Save Changes**.
5. Restart the Hue Load Balancer.

Table Browser Must Be Refreshed to View Tables Created with the Data Import Wizard

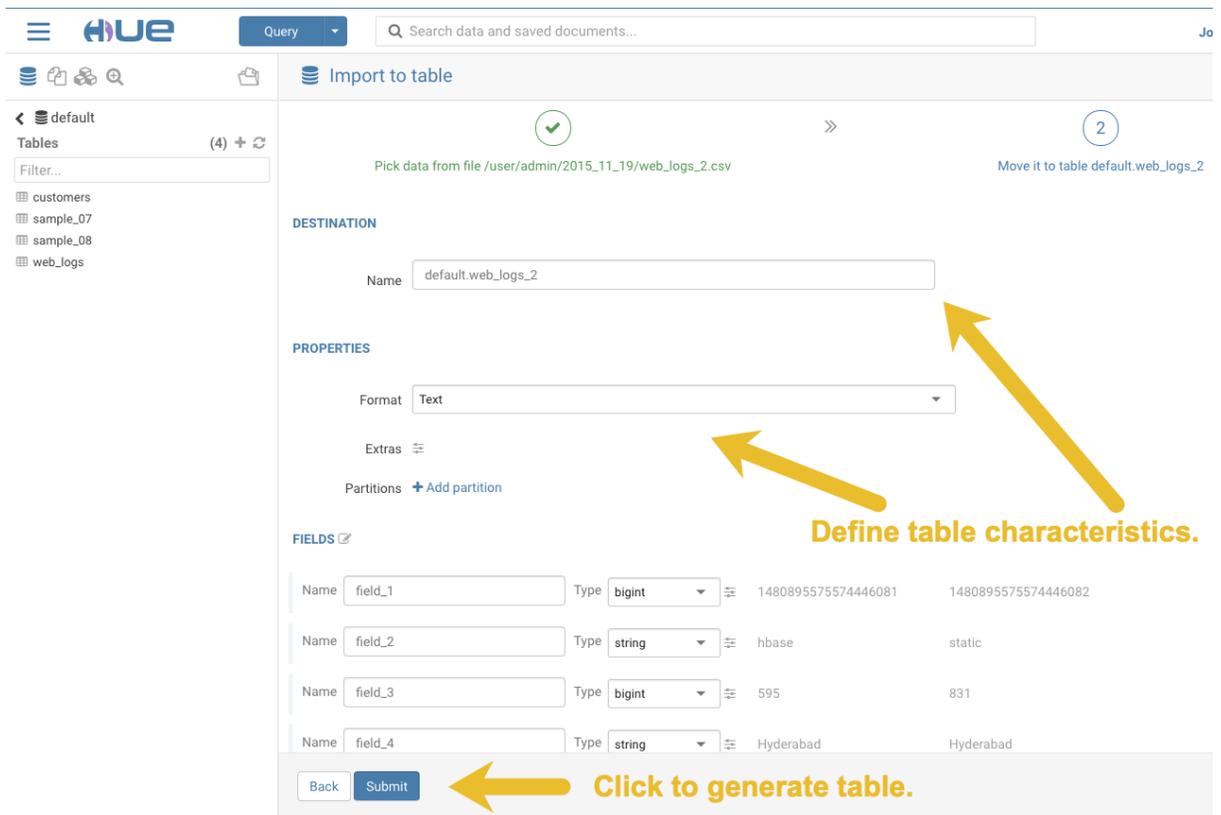
When you create a new table from a file by using the Data Import Wizard, the newly created table columns do not display in the Table Browser until you refresh it.

For example:

1. Create a table from the sample file `web_logs_2.csv` by clicking the plus sign in the left panel, which launches the Data Import Wizard:



2. After you define the table, click **Submit** to generate the new table:

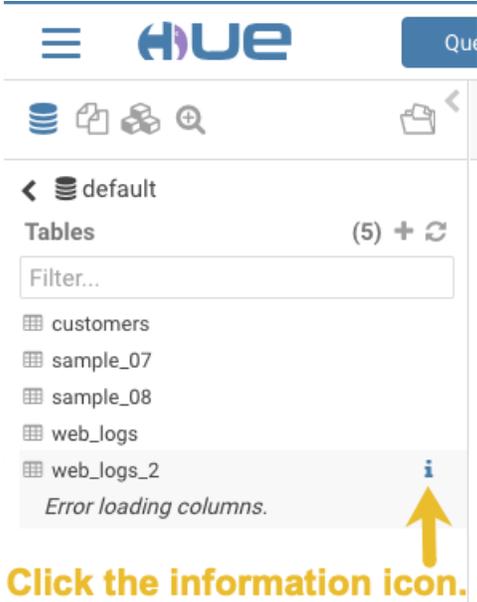


3. After you generate the new table, you can see it listed on the left assist panel, but when you click the table name to display the columns, an error displays:

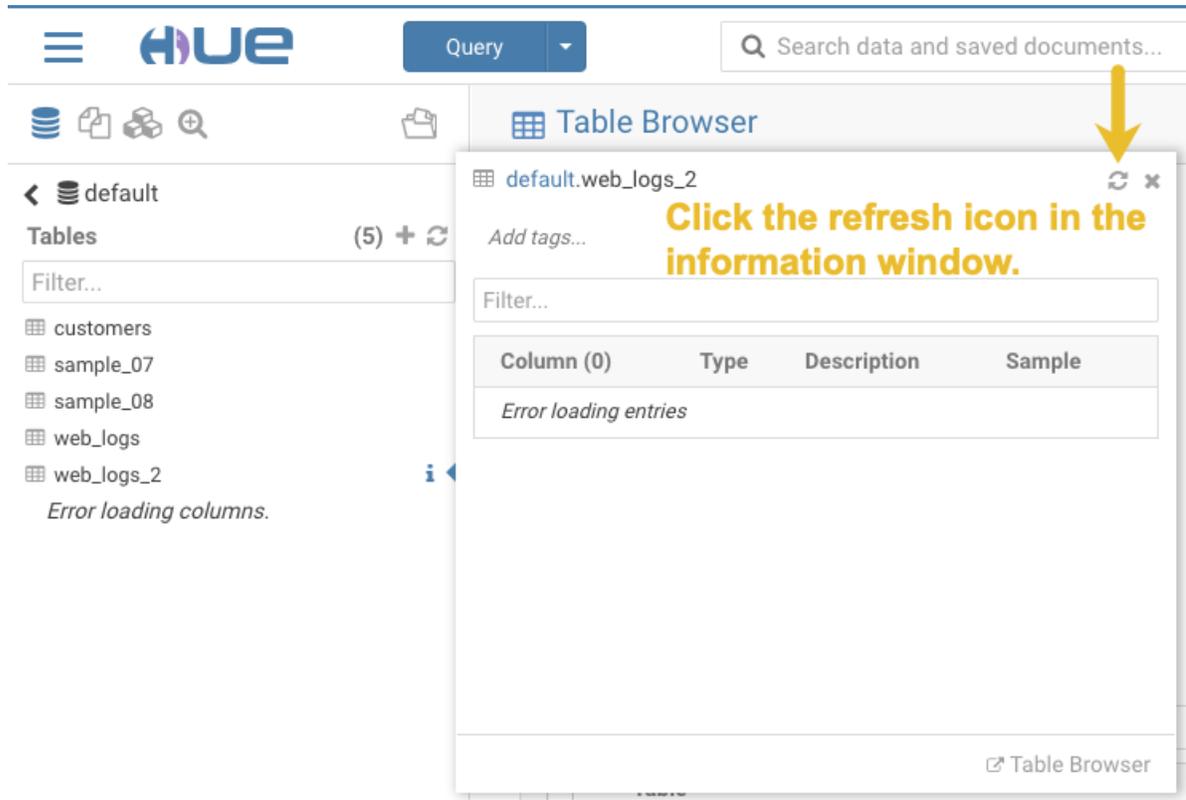


Workaround:

- 1. Click the information icon that is adjacent to the new table:



- 2. In the information window that opens, click the refresh icon in the upper right corner to view the table columns:



Using the refresh icon in the information window is the least expensive way to refresh the page so performance is not affected.

Affected Version(s): CDH 6.2.0

Cloudera Issue: CDH-77238

Hue does not support the Spark App

Hue does not currently support the Spark application.

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname`, only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \{(string)\} [=:].*` And the replacement could be for example: `secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

.

Products affected:

- CDP Private Cloud Base
- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: CVE-2021-28131

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Authenticated user with access to active session or query id can hijack other Impala session or query

If an authenticated Impala user supplies a valid query id to Impala's HS2 and Beeswax interfaces, they can perform operations on other sessions or queries when normally they do not have privileges to do so.

Releases affected:

- CDH 5.16.x and lower
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0

Users affected: All Impala users of affected versions.

Date/time of detection: 21st May 2019

Severity (Low/Medium/High): 7.5 (High) ([CVSS 3.0: AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:N/A:N](#))

Impact: Neither the original issue or the fix affect the normal use of the system.

CVE: CVE-2019-10084

Immediate action required: There is no workaround, upgrade to a version of CDH containing the fix.

Addressed in release/refresh/patch: CDH 6.2.1 and higher versions

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

System-wide auth-to-local mapping not applied correctly to Kudu service account

Due to system `auth_to_local` mapping, the principal may be mapped to some local name.

When running with Kerberos enabled, you may hit the following error message where `<random-string>` is some random string which doesn't match the primary in the Kerberos principal.

```
WARNINGS: TransmitData() to X.X.X.X:27000 failed: Remote error: Not authorized:
{username='<random-string>', principal='impala/redacted'} is not allowed to access
DataStreamService
```

Workaround: Start Impala with the `--use_system_auth_to_local=false` flag to ignore the system-wide `auth_to_local` mappings configured in `/etc/krb5.conf`.

Affected Versions: CDH 5.15, CDH 6.1 and higher

Apache Issue: KUDU-2198

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate
section memory!
terminate called after throwing an instance of
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>
>'
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max
echo 2000000 > /proc/sys/kernel/pid_max
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)**Breakpad minidumps can be very large when the thread count is high**

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the `impalad` daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Incorrect result due to constant evaluation in query with outer join

An `OUTER JOIN` query could omit some expected result rows due to a constant such as `FALSE` in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
  INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
  RIGHT JOIN alltypes a3 ON a1.year = a1.bigint_col;
+-----+
| Explain String |
+-----+
| Estimated Per-Host Requirements: Memory=1.00KB VCores=1 |
| 00:EMPTYSET |
+-----+
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a `LIKE` operator is an escaped `\%` character, it does not match a `%` final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: `impala::Coordinator::ValidateCollectionSlots`

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Configuration needed for Flume to be compatible with Impala

For compatibility with Impala, the value for the Flume HDFS Sink `hdfs.writeFormat` must be set to `Text`, rather than its default value of `Writable`. The `hdfs.writeFormat` setting must be changed to `Text` before creating data files with Flume; otherwise, those files cannot be read by either Impala or Hive.

Resolution: This information has been requested to be added to the upstream Flume documentation.

Affected Versions: All CDH 6 versions

Cloudera Issue: CDH-13199

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null", "string"]` instead of `["string", "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Set limits on size of expression trees

Very deeply nested expressions within queries can exceed internal Impala limits, leading to excessive memory usage.

Workaround: Avoid queries with extremely large expression trees. Setting the query option `disable_codegen=true` may reduce the impact, at a cost of longer query runtime.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4551](#)

Impala does not support running on clusters with federated namespaces

Impala does not support running on clusters with federated namespaces. The `impalad` process will not start on a node running such a filesystem based on the `org.apache.hadoop.fs.viewfs.ViewFs` class.

Workaround: Use standard HDFS on all Impala nodes.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-77](#)

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for `impalad_flags`** to specify the load balancer address with the HiveServer2 port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

Unable to Correctly Parse the Terabyte Unit

Impala does not support parsing strings that contain "TB" when used as a unit for terabytes. The flags related to memory limits may be affected, such as the flags for scratch space and data cache.

Workaround: Use other supported units to specify values, e.g. GB or MB.

Affected Versions: CDH 6.3.x and lower versions

Fixed Versions: CDH 6.4.0

Apache Issue: [IMPALA-8829](#)

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

Casting scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: All CDH 6 versions

Apache Kafka Known Issues

Potential to bypass transaction and idempotent ACL checks in Apache Kafka

It is possible to manually craft a Produce request which bypasses transaction and idempotent ACL validation. Only authenticated clients with Write permission on the respective topics are able to exploit this vulnerability.

Products affected:

- CDH
- CDK Powered by Apache Kafka

Releases affected:

- CDH versions 6.0.x, 6.1.x, 6.2.0
- CDK versions 3.0.x, 3.1.x, 4.0.x

Users affected: All users who run Kafka in CDH and CDK.

Date/time of detection: September, 2018

Severity (Low/Medium/High): 7.1 (High) ([CVSS:3.0/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:H/A:H](#))

Impact: Attackers can exploit this issue to bypass certain security restrictions to perform unauthorized actions. This can aid in further attacks.

CVE: CVE-2018-17196

Immediate action required: Update to a version of CDH containing the fix.

Addressed in release/refresh/patch:

- CDH 6.2.1, 6.3.2
- CDK 4.1.0

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-378: Potential to bypass transaction and idempotent ACL checks in Apache Kafka](#)

Kafka Broker Java configuration options in Cloudera Manager 6.2.0 are not applied to the broker JVM process

Cloudera Manager allows the configuration of JVM option for Kafka brokers via the **Additional Broker Java Options** (`broker_java_opts`) service parameter. In Cloudera Manager 6.2.0, when managing CDH 6.2.0 clusters, `'broker_java_opts'` are ignored when starting the Kafka broker process, resulting in using default JVM configuration options. This can lead to the following problems (depending on other environment variables):

- Kafka broker process does not use the recommended garbage collector settings leading to poor performance and increased resource (heap memory) utilization.
- Kafka broker process allows remote connection to JMX interface making the process vulnerable to remote code execution on the broker nodes.

Products affected: Apache Kafka

Affected version:

- CDH 6.2.0
- Cloudera Manager 6.2.0

Fixed version:

- CDH 6.2.1, 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-377: Kafka Broker Java configuration options in Cloudera Manager 6.2.0 are not applied to the broker JVM process Labels](#):

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to true.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: KAFKA-2561

Cloudera Issue: None

Connections with Expired Delegation Tokens Remain Active

Connections with expired delegation tokens stay alive even if the token expires. The connection will only terminate if the client disconnects. Once the client is disconnected it will not be able to reconnect with the expired token.

Workaround: N/A

Affected Versions: CDH 6.2.x

Fixed Versions: CDH 6.3.0 and higher

Apache Issue: [KAFKA-7352](#)

Cloudera Issue: N/A

The Idempotent and Transactional Capabilities of Kafka are Incompatible with Sentry

The idempotent and transactional capabilities of Kafka are not compatible with Sentry. The issue is due to Sentry being unable to handle authorization policies for Kafka transactions. As a result, users cannot use Kafka transaction in combination with Sentry.

Workaround: Use the Sentry super user in applications where idempotent producing is a requirement or disable Sentry.

Affected Versions: CDK 4.0 and later, CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.3.0

Fixed Versions: CDH 6.2.1, 6.3.1

Apache Issue: N/A

Cloudera Issue: CDH-80606

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions: All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

Apache Kudu Known Issues

The following are known bugs and issues in Kudu. Note that this list is not exhaustive, and is meant to communicate only the most important known issues.

Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement

DDL and DML operations can accumulate in the Kudu tablet replica's write ahead log (WAL) during normal operation. Upon the shutdown of a tablet replica (for example, right before removing the replica), information on the accumulated operations (first 50) are printed into the tablet server's INFO log file.

A bug was introduced with the fix for KUDU-2690. The code contains a flipped if-condition that results in de-referencing of an invalid pointer while reporting on a pending ALTER TABLE operation in the tablet replica's WAL. The issue manifests itself in kudu-tserver processes crashing with SIGSEGV (segmentation fault).

The occurrence of the issue is limited to scenarios which result in accumulating at least one pending ALTER TABLE operation in the tablet replica's WAL at the time when the tablet replica is shut down. An example scenario is an ALTER TABLE request (for example, adding a column) immediately followed by a request to drop a tablet (for example, drop a range partition). Another example scenario is shutting down a tablet server while it's still processing an ALTER TABLE request for one of its tablet replicas. A slowness in file system operations increases the chances for the issue to manifest itself.

Apache issue: [KUDU-2690](#)

Component affected: Kudu

Products affected: CDH

Releases affected:

- CDH 6.2.0, 6.2.1
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Kudu clusters with the impacted releases.

Impact: In the worst case, multiple kudu-tserver processes can crash in a Kudu cluster, making data unavailable until the affected tablet servers are started back.

Severity: High

Action required:

- **Workaround:** Avoid dropping range partitions and tablets right after issuing ALTER TABLE request. Wait for the pending ALTER TABLE requests to complete before dropping tablets or shutting down tablet servers.
- **Solution:** Upgrade to CDH 6.3.4 or CDP

Knowledge article: For the latest update on this issue see the corresponding Knowledge article:

[TSB 2020-449: Kudu tablet server might crash in certain workflows where a tablet is dropped right after ALTER TABLE statement](#)

Kudu Masters unable to join back after a restart

In a multi master Kudu environment, if a master is restarted or goes offline for a few minutes, it can occasionally have trouble joining the cluster on startup. For example, if this happens in case of three kudu masters, and one of the other two masters is stopped or dies during this time, then the overall Kudu cluster is down because the majority of the masters are not running.

This issue is resolved by the [KUDU-2748](#) upstream JIRA.

Products affected: Apache Kudu

Affected version:

- CDH 5.14.0, 5.14.2, 5.14.4
- CDH 5.15.0, 5.15.1, 5.15.2
- CDH 5.16.1, 5.16.2
- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0, 6.2.1

Fixed version:

- CDH 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-442: Kudu Masters unable to join back after a restart](#)

Timeout Possible with Log Force Synchronization Option

If the Kudu master is configured with the `-log_force_fsync_all` option, tablet servers and clients will experience frequent timeouts, and the cluster may become unusable.

Affected Versions: All CDH 6 versions

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Fault Tolerant Scan Memory Issue

Unlike regular scans, fault tolerant scans will allocate all required memory when the scan begins rather than as it progresses. This can be significant for big tablets. Moreover, this memory usage isn't counted towards the tablet server's overall memory limit, raising the likelihood of the tablet server being out-of-memory killed by the kernel.

Affected Versions: CDH 6.2 / Kudu 1.9 and lower

Apache Issue: [KUDU-2466](#)

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |

| Field | Usage Notes |
|--|---|
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used due to a sys table change in PostgreSQL from version 9.5 to 9.6. The failure only happens if Oozie uses a JDBC driver earlier than 9.4.1209.

Workaround:

1. After the parcels of the new version are distributed, replace the PostgreSQL JDBC driver with a newer one (version 9.4.1209 or higher) in the new parcel, at the following locations:
 - /opt/cloudera/parcels/\${newparcel.version}/lib/oozie/lib/
 - /opt/cloudera/parcels/\${newparcel.version}/lib/oozie/libtools/
2. Perform the upgrade.



Note: If you already started the upgrade and the process stops with an error message about missing columns, you can change the drivers at that point of the process as well, and resume the upgrade.

If your cluster is installed from packages, you must change the drivers at the following locations:

- /usr/lib/oozie/libtools/
- /usr/lib/oozie/lib/



Note: You can change the driver after the packages installation, but before running the CDH upgrade wizard. You can also do it during the update process, when the error occurs.

You can download the driver from the [PostgreSQL JDBC driver homepage](#).

Affected Versions: CDH 6.0.0 and higher

Fixed Version: CDH 6.2.1 and higher

Cloudera Issue: CDH-75951

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in Parquet.

Apache Pig Known Issues

There are no known issues in this release.

Apache Phoenix Known Issues

The current release includes the following known issue:

Phoenix artifacts in the Maven repository have transitive dependencies on some unavailable artifacts

The Phoenix artifacts provided in the Maven repository have transitive dependencies on some artifacts that are not available either in the Apache central repository, the Cloudera provided CDH repository, or the Cloudera provided Phoenix repository.

Workaround: When you add a dependency on any of the provided Maven Phoenix artifacts, you must exclude the `org.glassfish.web:javax.servlet.jsp` artifact. For example:

```
<dependency>
  <groupId>org.apache.phoenix</groupId>
  <artifactId>phoenix-core</artifactId>
  <version>5.0.0-cdh6.2.0</version>
  <exclusions>
    <exclusion>
      <groupId>org.glassfish.web</groupId>
      <artifactId>javax.servlet.jsp</artifactId>
    </exclusion>
  </exclusions>
</dependency>
```

Affected Versions: CDH 6.2.0, 6.2.1, 6.3.0

Cloudera Issue: CDH-81419

Cloudera Search Known Issues

The current release includes the following known limitations:

Default Solr core names cannot be changed (limitation)

Although it is technically possible to give user-defined Solr core names during core creation, it is to be avoided in the context of Cloudera Search. Cloudera Manager expects core names in the default "collection_shardX_replicaY" format. Altering core names results in Cloudera Manager being unable to fetch Solr metrics for the given core and this, eventually, may corrupt data collection for co-located core, or even shard and server level charts.

Processing UpdateRequest with delegation token throws NullPointerException

When using the Spark Crunch Indexer or another client application which utilizes the SolrJ API to send Solr Update requests with delegation token authentication, the server side processing of the request might fail with a NullPointerException.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Apache Issue: SOLR-13921

Cloudera Issue: CDH-82599

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

HBase Lily indexer might fail to write role log files

In certain scenarios the HBase Lily Indexer (Key-Value Store Indexer) fails to write its role log files.

Workaround: None

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82342

Adding a new indexer instance to HBase Lily Indexer fails with GSSException

When Kerberos authentication is enabled and adding a new indexer instance to HBase Lily Indexer (Key-Value Store Indexer), the authentication might fail when Lily is communicating to the HBase Master process, throwing a similar Exception:

```
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid
credentials provided (Mechanism level: Failed to find any Kerberos tgt)]
```

Workaround: Ensure that the Lily indexer has a Sentry dependency configured by following these steps:

1. Go to **Cloudera Manager > Key-Value Store indexer > Configuration**.
2. Make sure the **Sentry Service** configuration option points to a Sentry service instance instead of **none**.

The workaround does not require defining any Sentry roles or privileges, it is just to trigger a code execution path which will authenticate the HBase service user.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82566

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with CrunchIndexerTool, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the MapReduceIndexerTool nor the HBaseMapReduceIndexerTool

The MapReduceIndexerTool and the HBaseMapReduceIndexerTool can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the MapReduceIndexerTool or HBaseMapReduceIndexerTool. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the "Browse" and "Spell" Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irrecoverably corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using MapReduceIndexerTool or HBaseMapReduceIndexerTool multiple times may produce duplicate entries in a collection.

Repeatedly running the MapReduceIndexerTool on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the HBaseMapReduceIndexerTool unless it is run with more than zero reducers.

Workaround: To avoid this issue, use HBaseMapReduceIndexerTool with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139

Apache Sentry Known Issues

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.

Affected Versions:

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694

GRANT/REVOKE operations could fail if there are too many concurrent requests

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.

Affected Versions: CDH 5.13.0 and above

Apache Issue: [SENTRY-1855](#)

Cloudera Issue: CDH-56553

Creating large set of Sentry roles results in performance problems

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.

Affected Versions: CDH 5.13.0 and above

Cloudera Issue: CDH-59010

Users can't track jobs with Hive and Sentry

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above

Cloudera Issue: CDH-22890

Column-level privileges are not supported on Hive Metastore views

`GRANT` and `REVOKE` for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

`SELECT` privilege on all columns does not equate to `SELECT` privilege on table

Users who have been explicitly granted the `SELECT` privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as `SELECT COUNT (1)` or `SELECT COUNT (*)` will not work even if you have the `SELECT` privilege on all columns.

There is one exception to this. The `SELECT * FROM TABLE` command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The `EXPLAIN SELECT` operation works without table or column-level privileges

Users are able to run the `EXPLAIN SELECT` operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types `Server` and `URI` are not supported in `SHOW GRANT ROLE roleName ON OBJECT objectName`

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|--------------------------|---------------------------------|
| hdfs://absolute/path/ | hdfs://relative/path |
| s3a://bucketname/ | s3a://bucketname |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6.1.x. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

`RDD.repartition()` has different failure handling in Spark 2.4 and may cause job failures

The `RDD.repartition()` transformation, which reshuffles data in the RDD randomly to create either more or fewer partitions and then balances it across the partitions, was using a round-robin method to distribute data that caused incorrect answers to be returned for RDD jobs. This issue has been corrected, but it introduced a behavior change in RDD job failure handling. Now, Spark actively fails a job if there is a fetch failure that was caused by a node failure after repartitioning.

Workaround: Use the `RDD.checkpoint()` method to save the intermediate RDD data to HDFS. First, call `SparkContext.setCheckpointDir(directory: String)` to set the checkpoint directory where the intermediate data will be saved. Note that the directory must be an HDFS path. Then mark the RDD for checkpointing by calling `RDD.checkpoint()` when you use the `RDD.repartition()` transformation.

Apache Issue: [SPARK-23243](#)

Cloudera Issue: CDH-76413

Structured Streaming exactly-once fault tolerance constraints

In Spark Structured Streaming, the exactly-once fault tolerance for `file sink` is valid only for files that are in the manifest. These files are located in the `_spark_metadata` subdirectory of the `file sink` output directory. Only process files that have file names starting with digits. Other temporary files can also appear in this directory, but they should not be processed. Typically, these temporary file names start with a period (".").

You can list the valid manifest files, excluding the temporary files, by using a command like the following, which assumes your output directory is located at `/tmp/output`. As the appropriate user, run the following command to list the valid manifest files:

```
hadoop fs -ls /tmp/output/_spark_metadata/[0-9]*
```

Workaround: None

Affected Versions: CDH 6.1.0 and higher

Cloudera Issue: CDH-75191

Spark SQL does not respect size limit for the `varchar` type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's `client` mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

Apache Sqoop Known Issues

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (doc import + `--as-parquetfile`) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (`sqoop import --as-parquetfile`) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \${CONDITIONS}" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/5dbcac42-5d69-4e46-88c2-17dbedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a `--target-dir` which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

There are no known issues in this release.

CDH 6.1.x Release Notes

To view release notes for specific CDH 6.1.x releases, see the following:

CDH 6.1.1 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for CDH 6.1.1:

What's New in CDH 6.1.1

This is a maintenance release that fixes some important issues. For details, see [Fixed Issues in CDH 6.1.1](#) on page 919.

Fixed Issues in CDH 6.1.1*Hue allows unsigned SAML assertions*

If Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

Products affected: Hue, CDH

Releases affected:

- CDH 5.15.x and earlier
- CDH 5.16.0, 5.16.1
- CDH 6.0.x
- CDH 6.1.x

User affected: All users who are using SAML with Hue.

CVE: CVE-2019-14775

Date/time of detection: January 2019

Detected by: Joel Snape

Severity (Low/Medium/High): High

Impact:

This is a significant security risk as it allows anyone to fake their access validity and therefore access Hue, even if they should not have access. In more detail: if Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

CVE: CVE-2019-14775

Immediate action required:

- **Upgrade (recommended):** Upgrade to a version of CDH containing the fix.
- **Workaround:** None

Addressed in release/refresh/patch:

- CDH 5.16.2
- CDH 6.2.0

XSS Cloudera Manager

Malicious Impala queries can result in Cross Site Scripting (XSS) when viewed in Cloudera Manager.

Products affected: Apache Impala

Releases affected:

- Cloudera Manager 5.13.x, 5.14.x, 5.15.1, 5.15.2, 5.16.1

- Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Users affected: All Cloudera Manager Users

Date/time of detection: November 2018

Severity (Low/Medium/High): High

Impact: When a malicious user generates a piece of JavaScript in the impala-shell and then goes to the Queries tab of the Impala service in Cloudera Manager, that piece of JavaScript code gets evaluated, resulting in an XSS.

CVE: CVE-2019-14449

Immediate action required: There is no workaround, upgrade to the latest available maintenance release.

Addressed in release/refresh/patch:

- Cloudera Manager 5.16.2
- Cloudera Manager 6.0.2, 6.1.1, 6.2.0, 6.3.0

CVE-2018-1296 Permissive Apache Hadoop HDFS listXAttr Authorization Exposes Extended Attribute Key/Value Pairs

AHDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent.

Products affected: Apache HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0, 6.0.1, 6.1.0

Users affected: Users who store sensitive data in extended attributes, such as users of HDFS encryption.

Date/time of detection: December 12, 2017

Detected by: Rushabh Shah, Yahoo! Inc., Hadoop committer

Severity (Low/Medium/High): Medium

Impact: HDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent. This affects features that store sensitive data in extended attributes.

CVE: CVE-2018-1296

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: If a file contains sensitive data in extended attributes, users and admins need to change the permission to prevent others from listing the directory that contains the file.

Addressed in release/refresh/patch:

- CDH 5.15.2, 5.16.1
- CDH 6.1.1, 6.2.0

The Standby Resource Manager redirects /jmx and /metrics requests to the Active Resource Manager.

When ResourceManager high availability is enabled the Standby Resource Manager redirects /jmx and /metrics requests to the Active Resource Manager. This causes the following issues in Cloudera Manager:

- If **Enable Kerberos Authentication for HTTP Web-Console** is disabled: Cloudera Manager shows statistics for the wrong server.
- If **Enable Kerberos Authentication for HTTP Web-Console** is enabled: connection from the agent to the standby fails with the `HTTPError: HTTP Error 401: Authentication required` error message. As a result, the health of the Standby Resource Manager will become bad.

Workaround: N/A

Affected Versions: CDH 6.0.x, CDH 6.1.0

Fixed Version: CDH 6.1.1

Cloudera Issue: CDH-76040

Hadoop LdapGroupsMapping does not support LDAPS for self-signed LDAP server

Hadoop LdapGroupsMapping does not work with LDAP over SSL (LDAPS) if the LDAP server certificate is self-signed. This use case is currently not supported even if Hadoop User Group Mapping LDAP TLS/SSL Enabled, Hadoop User Group Mapping LDAP TLS/SSL Truststore, and Hadoop User Group Mapping LDAP TLS/SSL Truststore Password are filled properly.

Affected Versions: CDH 5.x and 6.0.x versions

Fixed Versions: CDH 6.1.0

Apache Issue: [HADOOP-12862](#)

Cloudera Issue: CDH-37926

Upstream Issues Fixed

See below for issues fixed in CDH 6.1.1, grouped by component:

Apache Accumulo

There are no notable fixed issues in this release.

Apache Avro

There are no notable fixed issues in this release.

Apache Crunch

There are no notable fixed issues in this release.

Apache Flume

There are no notable fixed issues in this release.

Apache Hadoop HDFS

The following issues are fixed in CDH 6.1.1:

- [HADOOP-15717](#) - Fixed an issue where an IOException related to `tgt.getEndTime()` was not correctly logged.
- [HADOOP-15823](#) - Fixed an issue with ALDS Gen2 (ABFS) that required the user to configure the client ID and tenant ID for MSI.
- [HADOOP-15973](#) - Fixed an issue where configuration resources are not cached if they are a stream.

MapReduce 2

The following issues are fixed in CDH 6.1.1:

- [MAPREDUCE-7131](#) - Fixed a race condition where the Job History Server moves files from intermediate to finished but thinks the files are in intermediate.
- [MAPREDUCE-7156](#) - Fixed a NullPointerException when you reach the max shuffle connections.
- [MAPREDUCE-7159](#) - Enhanced the FrameworkUploader to ensure proper permissions of generated framework tar.gz if restrictive umask is used.

YARN

There are no notable fixed issues in this release.

Apache HBase

The following issues are fixed in CDH 6.1.1:

- [HBASE-21237](#) - Use CompatRemoteProcedureResolver to dispatch open/close region requests to RS

- [HBASE-21351](#) - The force update thread may have race with PE worker when the procedure is rolling back
- [HBASE-21503](#) - Replication normal source can get stuck due potential race conditions between source wal reader and wal provider initialization threads.
- [HBASE-21504](#) - If enable FIFOCompactionPolicy, a compaction may write a "empty" hfile whose maxTimeStamp is long max. This kind of hfile will never be archived.
- [HBASE-21618](#) - Scan with the same startRow(inclusive=true) and stopRow(inclusive=false) returns one result
- [HBASE-21621](#) - Reversed scan does not return expected number of rows
- [HBASE-21683](#) - Reset readsEnabled flag after successfully flushing the primary region

Apache Hive

The following issues are fixed in CDH 6.1.1:

- [HIVE-14557](#) - Nullpointer When both SkewJoin and Mapjoin Enabled
- [HIVE-20168](#) - ReduceSinkOperator Logging Hidden
- [HIVE-20169](#) - Print Final Rows Processed in MapOperator

Hue

The following issues are fixed in CDH 6.1.1:

- [HUE-8631](#) - [hbase] pull thrift transport from hbase-site.xml
- [HUE-8675](#) - [core] Fix external users created as superuser

Apache Impala

The following issues are fixed in CDH 6.1.1:

- [IMPALA-6661](#) - Treats NaN values to be equal when grouping, putting all NaN values in one group.
- [IMPALA-7777](#) - Fixed a crash due to arithmetic overflows in the Exchange Node.
- [IMPALA-5474](#) - Fixed an issue where adding a trivial subquery to a query with an error turns the error into a warning.
- [IMPALA-7939](#) - Fixed an issue in Impala Shell that would not run a valid `CREATE TABLE` statement when there is a word, "update", in the expression.
- [IMPALA-7960](#) - Fixed incorrect comparisons of `TIMESTAMP` when they were cast to shorter `VARCHAR` and `STRING`.
- [IMPALA-8026](#) - Now correctly calculates the number of rows for nested loop joins in query profiles.
- [IMPALA-7857](#) - Logs more information about the StateStore failure detection.

Apache Kafka

There are no notable fixed issues in this release.

Apache Kudu

The following issue is fixed in CDH 6.1.1:

- [KUDU-1678](#) - Fixed a rare crash caused by a race condition when a replica is shutting down while processing an alter table.

Apache Oozie

The following issues are fixed in CDH 6.1.1:

- [OOZIE-3382](#) - [SSH action] Optimize process streams draining

Apache Parquet

The following issues are fixed in CDH 6.1.1:

- [PARQUET-1305](#) - Backward incompatible change introduced in 1.8
- [PARQUET-1407](#) - Avro: Fix binary values returned from dictionary encoding
- [PARQUET-1472](#) - Dictionary filter fails on `FIXED_LEN_BYTE_ARRAY`

Apache Pig

The following issues are fixed in CDH 6.1.1:

- [PIG-5373](#) - InterRecordReader might skip records if certain sync markers are used
- [PIG-5374](#) - Use CircularFifoBuffer in InterRecordReader

Cloudera Search

The following issues are fixed in CDH 6.1.1:

- [SOLR-12615](#) - HashQParserPlugin won't throw an NPE for string hash key and documents with empty value
- [SOLR-12674](#) - RollupStream should not use the HashQueryParser for 1 worker

Apache Sentry

The following issues are fixed in CDH 6.1.1:

- [SENTRY-2428](#) - Skip null partitions or partitions with null sds entries
- [SENTRY-2464](#) - Catch exception thrown on first reload for UpdatableCache

Apache Spark

The following issues are fixed in CDH 6.1.1:

- [SPARK-25767](#) - [SQL] Fix lazily evaluated stream of expressions in code generation
- [SPARK-26079](#) - [SQL] Ensure listener event delivery in StreamingQueryListenersConfSuite.
- [SPARK-26118](#) - [WEB UI] Introducing spark.ui.requestHeaderSize for setting HTTP requestHeaderSize
- [SPARK-26201](#) - Fix python broadcast with encryption
- [SPARK-26605](#) - [YARN] Update AM's credentials when creating tokens.
- [SPARK-26680](#) - [SQL] Eagerly create inputVars while conditions are appropriate

Apache Sqoop

There are no notable fixed issues in this release.

Apache Zookeeper

There are no notable fixed issues in this release.

Unsupported Features in CDH 6.1.1

This page lists the unsupported features in CDH 6.1.x. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.1.1](#) on page 961.

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 923
- [YARN Unsupported Features](#) on page 924

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.x:

- ACLs for the NFS gateway
- Aliyun Cloud Connector
- HDFS Router Based Federation
- HDFS truncate
- More than two NameNodes
- NameNode Federation
- Openstack Swift
- Quota support for Storage Types
- SFTP FileSystem
- Upgrade Domain
- Variable length block

- ZStandard Compression Codec

YARN Unsupported Features

The following YARN features are not supported in CDH 6.1.x:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers
- Distributed Scheduling
- Docker on YARN (DockerContainerExecutor)
- Native Services
- New Aggregated Log File Format
- Node Labels
- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Estimator Service
- Resource Profiles
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.1.x:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction
- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation
- Client tarball
- Serial replication
- Rolling upgrade from CDH 5 HBase versions

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.1.x:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution
- Hive Metastore - Derby

- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))
- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka features are not supported in CDH 6.1.x:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.
- Idempotent and transactional capabilities in the producer are currently an unsupported beta feature given their maturity and complexity. This feature will be supported in a future release.
- Kafka Connect is included in CDH 6.1.0, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- Kafka Streams is included in CDH 6.0.0, but is not supported. Instead, use Spark and Spark Streaming have a fully functional ETL/stream processing pipeline. See [Using Kafka with Apache Spark Streaming for Stream Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.1.0, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.
- The legacy Scala clients (producer and consumer) that are under the `kafka.producer.*` and `kafka.consumer.*` package are removed in CDH 6.1.0. See [Deprecated Scala-based Client API and New Java Client API](#) on page 1259.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.1.x:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.1.x:

- Pig on Tez is not supported in CDH 6.1.x ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.1.x:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.1.x:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

([Known Issue](#))

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.x, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.1.x:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)
- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is supported, but the following features of it *are not*:
 - Continuous processing, which is still experimental, is not supported
 - Stream static joins with HBase have not been tested and therefore are not supported
- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.1.x:

- `import-mainframe`

Incompatible Changes in CDH 6.1.1



Important:

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.1.1, grouped by component:

Apache Accumulo

CDH 6.1.1 introduces no new incompatible changes for Apache Accumulo.

Apache Avro

API Changes

One method was removed in CDH 6.0.0:

```
GenericData.toString (Object datum, StringBuilder buffer)
```

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires GenericEnumSymbol - likely to break current Generic API users that often have String or Java Enum for these fields
- [AVRO-1502](#): Avro Objects now Serializable - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be HTrace
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.
- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).
- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. The only additional configuration required to use HBase2Sink is to replace the component name in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

`com.google.common.collect.ImmutableMap`

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

- [HDFS](#) on page 928
- [MapReduce](#) on page 929
- [YARN](#) on page 929

HDFS

CDH 6.1.1 introduces no new incompatible changes for HDFS.

CDH 6.1.0 introduces no new incompatible changes for HDFS.

CDH 6.0.1 introduces no new incompatible changes for HDFS.

CDH 6.0.0 introduces the following incompatible changes for HDFS:

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.
- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSClient#mkdirs` and `DFSClient#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.

- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.
 - All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.
- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0
- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.
- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0
 - asm from 3.2 to 5.0.4

MapReduce

CDH 6.1.1 introduces no new incompatible changes for MapReduce.

CDH 6.1.0 introduces no new incompatible changes for MapReduce.

CDH 6.0.1 introduces no new incompatible changes for MapReduce.

CDH 6.0.0 introduces the following incompatible changes:

- Support for MapReduce v1 has been dropped from CDH 6.0.0.
- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

CDH 6.1.1 introduces no new incompatible changes for YARN.

CDH 6.1.0 introduces no new incompatible changes for MapReduce.

CDH 6.0.1 introduces no new incompatible changes for YARN.

CDH 6.0.0 introduces no new incompatible changes for YARN.

Apache HBase

CDH 6.1.x contains the following downstream HBase incompatible change:

`hbase.security.authorization`

The default value for `hbase.security.authorization` has been changed from `true` to `false`. Secured clusters should make sure to explicitly set it to `true` in XML configuration file before upgrading to one of these versions ([HBASE-19483](#)). True as the default value of `hbase.security.authorization` was changed because not all clusters need authorization. (History: [HBASE-13275](#)) Rather, only the clusters which need authorization should set this configuration as `true`.

Incompatible Changes

For more information about upstream incompatible changes, see the Apache Reference Guide [Incompatible Changes](#) and [Upgrade Paths](#).

CDH 6.1.0 introduces the following incompatible changes for HBase:

- [HBASE-20270](#): Error triggered command help is no longer available.
- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.

CDH 6.0.x introduces the following upstream HBase incompatible changes:

- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.
- Public interface API changes:
 - [HBASE-15607](#): Admin
 - [HBASE-19112](#), [HBASE-18945](#): Cell
 - Region, Store, HBaseTestingUtility
- [HBASE-18792](#): hbase-2 needs to defend against hbck operations
- [HBASE-15982](#): Interface ReplicationEndpoint extends Guava's Service.
- [HBASE-18995](#): Split CellUtil into public CellUtil and PrivateCellUtil for Internal use only.
- [HBASE-19179](#): Purged the hbase-prefix-tree module and all references from the code base.
- [HBASE-17595](#): Add partial result support for small/limited scan; Now small scan and limited scan could also return partial results.
- [HBASE-16765](#): New default split policy, SteppingSplitPolicy.
- [HBASE-17442](#): Move most of the replication related classes from hbase-client to hbase-replication package.
- [HBASE-16196](#): The bundled JRuby 1.6.8 has been updated to version 9.1.9.0.
- [HBASE-18811](#): Filters have been moved from Public to LimitedPrivate.
- [HBASE-18697](#): Replaced hbase-shaded-server jar with hbase-shaded-mapreduce jar.
- [HBASE-18640](#): Moved mapreduce related classes out of hbase-server into separate hbase-mapreduce jar .
- [HBASE-19128](#): Distributed Log Replay feature has been removed.
- [HBASE-19176](#): Hbase-native-client has been removed.
- [HBASE-17472](#): Changed semantics of granting new permissions. Earlier, new grants would override previous permissions, but now, the new and existing permissions get merged.
- [HBASE-18374](#): Previous "mutate" latency metrics has been renamed to "put" metrics.
- [HBASE-15740](#): Removed Replication metric source.shippedKBs in favor of source.shippedBytes.
- [HBASE-13849](#): Removed restore and clone snapshot from the WebUI.
- [HBASE-13252](#): The concept of managed connections in HBase (deprecated before) has now been extinguished completely, and now all callers are responsible for managing the lifecycle of connections they acquire.
- [HBASE-14045](#): Bumped thrift version to 0.9.2.
- [HBASE-5401](#): Changes to number of tasks PE runs when clients are mapreduce. Now tasks == client count. Previous we hardcoded ten tasks per client instance.

Changed Behavior

CDH 6.1.x contains the following HBase behavior changes:

- [HBASE-14350](#): Assignment Manager v2 - Split/Merge have moved to the Master; it runs them now. Hooks around Split/Merge are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-18271](#): Moved to internal shaded netty.
- [HBASE-17343](#): Default MemStore to be CompactingMemStore instead of DefaultMemStore. In-memory compaction of CompactingMemStore demonstrated sizable improvement in HBase's write amplification and read/write performance.
- [HBASE-19092](#): Make Tag IA.LimitedPrivate and expose for CPs.
- [HBASE-18137](#): Replication gets stuck for empty WALs.

- [HBASE-17513](#): Thrift Server 1 uses different QOP settings than RPC and Thrift Server 2 and can easily be misconfigured so there is no encryption when the operator expects it.
- [HBASE-16868](#): Add a replicate_all flag to replication peer config. The default value is true, which means all user tables (REPLICATION_SCOPE != 0) will be replicated to peer cluster.
- [HBASE-19341](#): Ensure Coprocessors can abort a server.
- [HBASE-18469](#): Correct RegionServer metric of totalRequestCount.
- [HBASE-17125](#): Marked Scan and Get's setMaxVersions() and setMaxVersions(int) as deprecated. They are easy to misunderstand with column family's max versions, so use readAllVersions() and readVersions(int) instead.
- [HBASE-16567](#): Core is now up on protobuf 3.1.0 (Coprocessor Endpoints and REST are still on protobuf 2.5.0).
- [HBASE-14004](#): Fix inconsistency between Memstore and WAL which may result in data in remote cluster that is not in the origin (Replication).
- [HBASE-18786](#): FileNotFoundException opening a StoreFile in a primary replica now causes a RegionServer to crash out where before it would be ignored (or optionally handled via close/reopen).
- [HBASE-17956](#): Raw scans will also read TTL expired cells.
- [HBASE-17017](#): Removed per-region latency histogram metrics.
- [HBASE-19483](#): Added ACL checks to RSGroup commands - On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands.
- [HBASE-19358](#): Added ACL checks to RSGroup commands (HBASE-19483): On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands. Improved stability of splitting log when do failover.
- [HBASE-18883](#): Updated our Curator version to 4.0 - Users who experience classpath issues due to version conflicts are recommended to use either the hbase-shaded-client or hbase-shaded-mapreduce artifacts.
- [HBASE-16388](#): Prevent client threads being blocked by only one slow region server - Added a new configuration to limit the max number of concurrent request to one region server.
- [HBASE-15212](#): New configuration to limit RPC request size to protect the server against very large incoming RPC requests. All requests larger than this size will be immediately rejected before allocating any resources.
- [HBASE-15968](#): This issue resolved two long-term issues in HBase: 1) Puts may be masked by a delete before them, and 2) Major compactions change query results. Offers a new behavior to fix this issue with a little performance reduction. Disabled by default. See the issue for details and caveats.
- [HBASE-13701](#): SecureBulkLoadEndpoint has been integrated into HBase core as default bulk load mechanism. It is no longer needed to install it as a coprocessor endpoint.
- [HBASE-9774](#): HBase native metrics and metric collection for coprocessors.
- [HBASE-18294](#): Reduce global heap pressure: flush based on heap occupancy.

Apache Hive/Hive on Spark/HCatalog

Apache Hive

The following changes are introduced to Hive in CDH 6.0.0, and are not backwards compatible:

- [UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting](#) on page 1248
- [Support for UNION DISTINCT](#) on page 1249
- [OFFLINE and NO_DROP Options Removed from Table and Partition DDL](#) on page 1250
- [DESCRIBE Query Syntax Change](#) on page 1250
- [CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names](#) on page 1250
- [Reserved and Non-Reserved Keyword Changes in HiveQL](#) on page 1250
- [Apache Hive API Changes in CDH 6.0.0](#) on page 1252
- [Apache Hive Configuration Changes in CDH 6.0.0](#) on page 1253
- [HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes](#) on page 1256
- [Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column](#) on page 1256
- [Hive Logging Framework Switched to SLF4J/Log4j 2](#) on page 1256
- [Deprecated Parquet Java Classes Removed from Hive](#) on page 1256
- [Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms](#) on page 1257

- [S3N Connector Is Removed from CDH 6.0](#) on page 1257
- [Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request](#) on page 1257
- [Support Added for Escaping Carriage Returns and New Line Characters for Text Files \(LazySimpleSerDe\)](#) on page 1258
- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1258

Changing Table File Format from ORC with the ALTER TABLE Command Not Supported in CDH 6

Changing the table file format from ORC to another file format with the ALTER TABLE command is not supported in CDH 6 (it returns an error).

UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting

Prior to this change, Hive performed implicit casts when data types from different type groups were specified in queries that use UNION ALL. For example, before CDH 6.0, if you had the two following tables:

Table "one"

```
+-----+-----+-----+
| one.col_1 | one.col_2 | one.col_3 |
+-----+-----+-----+
| 21        | hello_all | b         |
+-----+-----+-----+
```

Where `col_1` datatype is `int`, `col_2` datatype is `string`, and `col_3` datatype is `char(1)`.

Table "two"

```
+-----+-----+-----+
| two.col_4 | two.col_5 | two.col_6 |
+-----+-----+-----+
| 75.0      | abcde    | 45        |
+-----+-----+-----+
```

Where `col_4` datatype is `double`, `col_5` datatype is `varchar(5)`, and `col_6` datatype is `int`.

And you ran the following UNION ALL query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS
col_3 FROM two;
```

You received the following result set:

```
+-----+-----+-----+
| _u1.col_1 | _u1.col_2 | _u1.col_3 |
+-----+-----+-----+
| 75.0      | abcde    | 4         |
| 21.0      | hello    | b         |
+-----+-----+-----+
```

Note that this statement implicitly casts the values from table `one` with the following errors resulting in data loss:

- `one.col_1` is cast to a `double` datatype
- `one.col_2` is cast to a `varchar(5)` datatype, which truncates the original value from `hello_all` to `hello`
- `one.col_3` is cast to a `char(1)` datatype, which truncates the original value from `45` to `4`

In CDH 6.0, no implicit cast is performed across different type groups. For example, `STRING`, `CHAR`, and `VARCHAR` are in one type group, and `INT`, `BIGINT`, and `DECIMAL` are in another type group, and so on. So, in CDH 6.0 and later, the

above query that uses `UNION ALL`, returns an exception for the columns that contain datatypes that are not part of a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
 - The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.
- **Behavior in CDH 6:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
 - The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:
 - `ENABLE | DISABLE NO_DROP [CASCADE]`
 - `ENABLE | DISABLE OFFLINE`
 - `ALTER TABLE ... IGNORE PROTECTION`
- The following support has also been removed from the `HiveMetastoreClient` class:

The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, `data`). *Non-reserved keywords* can be used as table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|---------|------------|------------|----------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |
| START | | | |

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|----------|----------|---------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |
| BOOLEAN | BOTH | BY | CREATE |
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |

| | | | |
|-----------|----------|-----------|-----------|
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|--------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLTIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|---------------|---------|-------------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |
| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252

- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a `CLOB` data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like "=", "<>", and "!=" might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with `CLOB` data types. There is no equivalent "<>" operator that is compatible with `CLOB`. So there is no equivalent operator for the above example that uses the "<>" inequality operator. The equivalent for "=" is the `LIKE` operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253
- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(hive.server2.enable.impersonation\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.
3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned table but do not filter on the partition column. | <code>false</code> |
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)
- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (`hive.server2.enable.impersonation`) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`
 - **Description:** Sets the file format in which a query's intermediate results are stored.
3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:

```
org.apache.hive.service.cli.thrift
```

To the following *new* namespace:

```
org.apache.hive.service.rpc.thrift
```

- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale

of 5, the value returned for zero was returned as 0. Now, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the `INPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat` and set the `OUTPUTFORMAT` to `org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`
- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanUp(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|--|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |
| REF_GENERATION | Specifies how values in the <code>SELF_REFERENCING_COL_NAME</code> column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the SerDe property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, `'r'` or `'n'` cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the `LazySerDeParameters` class. For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

There are no incompatible changes in this release.

Apache Impala

There are no incompatible changes in this release.

Apache Kafka

Incompatible Changes Introduced in CDH 6.1.1

CDH 6.1.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.1.0

Scala-based Client API Removed

Scala-based clients were deprecated in a previous release and are removed as of CDH 6.1.0.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are effected:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Default Behaviour Change

[KAFKA-7050](#): The default value for `request.timeout.ms` is decreased to 30 seconds. In addition, a new logic is added that makes the `JoinGroup` requests ignore this timeout.

Incompatible Changes Introduced in CDH 6.0.1

CDH 6.0.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.0.0

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see the previous entry). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`

- `kafka.tools.ExportZkOffset`
- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- `GroupCoordinatorNotAvailableException`
- `GroupLoadInProgressException`
- `NotCoordinatorForGroupException`
- `kafka.common.KafkaStorageException`

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Apache Kudu

Client Library Compatibility

- The Kudu 1.8 Java client library is API- and ABI-compatible with Kudu 1.7. Applications written against Kudu 1.7 will compile and run against the Kudu 1.8 client library and vice-versa.
- The Kudu 1.8 C++ client is API- and ABI-forward-compatible with Kudu 1.7. Applications written and compiled against the Kudu 1.7 client library will run without modification against the Kudu 1.8 client library. Applications written and compiled against the Kudu 1.8 client library will run without modification against the Kudu 1.7 client library.
- The Kudu 1.8 Python client is API-compatible with Kudu 1.7. Applications written against Kudu 1.7 will continue to run against the Kudu 1.8 client and vice-versa.

Apache Oozie

There are no incompatible changes in this release.

Apache Parquet

Packages and Group ID Renamed

As a part of the Apache incubation process, all Parquet packages and the project's group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|-----------------------------------|
| Java Package Names | <code>parquet.*</code> | <code>org.apache.parquet.*</code> |
| Group ID | <code>com.twitter</code> | <code>org.apache.parquet</code> |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update *.java files:

| Before | After |
|---------------------------------------|--|
| <code>import parquet.*;</code> | <code>import org.apache.parquet.*;</code> |

Update pom.xml:

| Before | After |
|---|--|
| <pre> <dependency> <groupId> com.twitter </groupId> <version> \${parquet.version} </version> </dependency> </pre> | <pre> <dependency> <groupId> org.apache.parquet </groupId> <version> \${parquet.version} </version> </dependency> </pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Pig

The following change is introduced to Pig in CDH 6.0 and it is not backwards compatible. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0 JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 52: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|---|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |
| VAR (stats) | Generates the variance of a set of values. | variance | None |
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 945. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 945. |
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way to filter using a logical disjunction over many values. | IN | None |

For more information about using Hive UDFs, see https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 53: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|-----------------------------|----------|------------|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |

| | | |
|-------------------------|---|---|
| <p>Examples:</p> | <pre> register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); } </pre> | <pre> define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc)); </pre> |
|-------------------------|---|---|

Although DataFu StreamingQuantile and StreamingMedian might appear to match Hive's percentile_approx function, Pig cannot consume percentile_approx.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 54: DataFu Functions with No Hive UDF Equivalent

| | | |
|----------------------------|-----------------------------|--------------------------------|
| AppendToBag (bags) | AssertUDF (util) | BagConcat (bags) |
| BagGroup (bags) | BagLeftOuterJoin (bags) | BagSplit (bags) |
| BoolToInt (util) | CountEach (bags) | DistinctBy (bags) |
| EmptyBagToNull (bags) | EmptyBagToNullFields (bags) | Enumerate (bags) |
| FirstTupleFromBag (bags) | HaversineDistInMiles (geo) | IntToBool (util) |
| MarkovPairs | NullToEmptyBag (bags) | PageRank (linkanalysis) |
| PrependToBag (bags) | ReservoirSample (sampling)* | ReverseEnumerate (bags) |
| SampleByKey (sampling)* | SessionCount (sessions) | Sessionize (sessions) |
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with TABLESAMPLE in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

The following changes are introduced in CDH 6.1

In CDH 6.1 Cloudera Search is rebased on Apache Solr 7.4.

Deprecations

- Enabling/disabling `autoAddReplicas` cluster-wide with the API is deprecated. Use `suspend/resume` trigger APIs with `name=".auto_add_replicas"` instead.
- In the `ReplicationHandler`, the `master.commitReserveDuration` sub-element is deprecated. Configure a direct `commitReserveDuration` element instead for use in all modes (leader, follower, cloud).

Removals

- The old Leader-In-Recovery implementation (implemented in Solr 4.9) has been removed and replaced. Solr supports rolling upgrades from old 7.x versions of Solr to future 7.x releases until the last release of the 7.x major version. This means that to upgrade to Solr 8, you will have to be on Solr 7.3 or higher.
- The throttling mechanism used to limit the rate of processed autoscaling events has been removed. This deprecates the `actionThrottlePeriodSeconds` setting in the `set-properties` command of Autoscaling API. Use the `triggerCooldownPeriodSeconds` parameter to pause event processing.
- The `RunExecutableListener` event listener was removed for security reasons. If you want to listen to events caused by updates and commits, or you want to optimize, write your own listener as native Java class as part of a Solr plugin.

For more information see the [Apache Solr 7.4 Release Notes](#).

The following changes are introduced in CDH 6.0

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.
- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

Apache Sentry contains the following incompatible change in CDH 6.0.0:

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.
- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.

- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.
Since compile-time type-safety in Python and R is not a language feature, the concept of `Dataset` does not apply to these languages' APIs. Instead, `DataFrame` remains the primary programming abstraction.
- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

CDH 6.1.1 introduces no new incompatible changes for Apache Sqoop.

The following changes are introduced in CDH 6.0, and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0. Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a `CHAR` or `VARCHAR` column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to `true` to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPSWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with `hcatalog` jobs or when `hive import` with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile
format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with `--hcatalog-table <HIVE_VIEW>`

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the `--hcatalog-table` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table"
--hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using `EscapeUtils`. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySQL after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of `--input-null-string` and `--input-null-non-string` options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using `--direct` connector and a MySQL database

The MySQL direct connector does not support the `--null-string`, `--null-non-string`, `--input-null-string`, and `--input-null-non-string` options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

There are no incompatible changes in this release.

Timezone Names Unsupported in Impala in CDH 6.1.1

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|------------|------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |

| | |
|--|--------------------------------|
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |

| | |
|--|----------------------|
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |

| | |
|------------------------------|---------------------------|
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |

| | |
|--|------------------------------|
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |
| FJST | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |

| | |
|--------------------|-------------------|
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |

| | |
|-------------------------------|--------------------|
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |

| | |
|--------------------------------|----------------------|
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |

| | |
|----------------------------|----------------------|
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |

| | |
|---------------------------------|------------------------|
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |
| Srednekolymk Time | Asia/Srednekolymk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |

| | |
|---------------------|---------------------|
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |

| | |
|-------------------------------|--------------------|
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |

| | |
|--------------------|--------------------|
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.1.1

The following sections describe the known issues in CDH 6.1.1, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-1000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.



Important: If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can workaround the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|----------------------------------|---|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.

5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
10. Click **Save Changes**.
11. Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.
10. Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|-----------------------|---|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

(1) Ensure that the kernel is up to date.

- **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
- **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
- **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

There are no notable known issues in this release of Apache Accumulo.

Apache Crunch Known Issues



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

Apache Flume Known Issues

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to false.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to Invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x
- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

HDFS

Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH
- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.
- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

HDFS Snapshot corruption

A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Products affected: HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0 - 6.2.1, 6.3.0, 6.3.1, 6.3.2

Users affected: Any clusters with HDFS Snapshots enabled

Impact: A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Standby NameNode detects the inconsistent snapshot data structure and shuts itself down. To recover from this situation, the fsimage must be repaired and put back into both NameNodes' fsimage directory for the Standby NameNode to start normally. The Active NameNode stays up. However no fsimage checkpoint is performed because the Standby NameNode is down.

This problem can also prevent snapshots from being deleted or files within snapshots being listed. The following is an example of a typical error:

```
hdfs dfs -deleteSnapshot /path snapshot_123
deleteSnapshot: java.lang.IllegalStateException
```

The recovery of the corrupt fsimage can result in the loss of snapshots.

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: Alternatively, avoid using snapshots. Cloudera BDR uses snapshots automatically when the relevant directories are snapshottable. Hence, we strongly recommend avoiding the upgrade to the affected releases if you are using BDR. For information and instructions, see [Enabling and Disabling HDFS Snapshots](#).

Addressed in release/refresh/patch: CDH 6.3.3

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-390: HDFS Snapshot corruption](#)

Clusters running CDH 5.16.1, 6.1.0, or 6.1.1 can lose some HDFS file permissions any time the Name Node is restarted

When a cluster is upgraded to 5.16.1, 6.1.0, or 6.1.1 roles with SELECT and/or INSERT privileges on an Impala database or table will have the REFRESH privilege added as part of the upgrade process. HDFS ACLs for roles with the REFRESH privilege get set with empty permissions whenever the Name Node is restarted. This can cause any jobs or queries run by users within affected roles to fail because they will no longer be able to access affected Impala database or tables.

Products Affected: HDFS and components that access files in HDFS

Affected Versions: CDH 5.16.1, 6.1.0, 6.1.1

Users Affected: Clusters with Impala and HDFS ACLs managed by Sentry upgrading from any release to CDH 5.16.1, 6.1.0, and 6.1.1.

Severity (Low/Medium/High): High

Root Cause and Impact: The new privilege REFRESH was introduced in CDH 5.16 and 6.1 and applies to Impala databases and tables. When a cluster is upgraded to 5.16.1, 6.1.0, or 6.1.1, roles with SELECT or INSERT privileges on an Impala database or table will have the REFRESH privilege added during the upgrade.

HDFS ACLs for roles with the REFRESH privilege get set with empty permissions whenever the Name Node is restarted. The Name Node is restarted during the upgrade.

For example if a group `appdev` is in role `appdev_role` and has SELECT access to the Impala table "project" the HDFS ACLs prior to the upgrade would look similar to:

```
group: appdev
      group::r--
```

After the upgrade the HDFS ACLs will be set with no permissions and will look like this:

```
group: appdev
      group::---
```

Any jobs or queries run by users within affected roles will fail because they will no longer be able to access affected Impala database or tables. This impacts any SQL client accessing the affected databases and tables. For example, if a

Hive client is used to access a table created in Impala it will also fail. Jobs accessing the files directly through HDFS, e.g. via Spark, will also be impacted.

The HDFS ACLs will get reset whenever the Name Node is restarted.

Immediate action required: If possible, do not upgrade to releases CDH 5.16.1, 6.1.0, or 6.1.1 if Impala is used and Sentry manages HDFS ACLs within your environment. Subsequent CDH releases will resolve the problem with a product fix under [SENTRY-2490](#).

If an upgrade is being considered, reach out to your account team to discuss other possibilities, and to receive additional insight into future product release schedules.

If an upgrade must be executed, contact Cloudera Support indicating the upgrade plan and why an upgrade is being executed. Options are available to assist with the upgrade if necessary.

Addressed in release/refresh/patch: Patches for 5.16.1, 6.1.0 and 6.1.1 are available for major supported operating systems. Customers are encouraged to contact Cloudera Support for a patch. The patch should be applied immediately after upgrade to any of the affected versions.

The fix for this TSB will be included in 6.1.2, 6.2.0, 5.16.2, and 5.17.0.

OIV ReverseXML processor fails

The HDFS OIV ReverseXML processor fails if the XML file contains escaped characters.

Affected Versions: CDH 6.x

Apache Issue: [HDFS-12828](#)

Cannot move encrypted files to trash

With HDFS encryption enabled, you cannot move encrypted files or directories to the trash directory.

Workaround: To remove encrypted files/directories, use the following command with the `-skipTrash` flag specified to bypass trash.

```
rm -r -skipTrash /testdir
```

Affected Versions: All CDH versions

Apache Issue: [HADOOP-10902](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:
 - Install CDH using Cloudera Manager; *or*
 - Start the NFS gateway as root; *or*
 - [Start the NFS gateway without using packages](#); *or*
 - You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the portmap.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to 777 on .snapshot directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

Permissions for `dfs.namenode.name.dir` incorrectly set

Hadoop daemons should set permissions for the `dfs.namenode.name.dir` (or `dfs.name.dir`) directories to `drwx-----` (700), but in fact these permissions are set to the file-system default, usually `drwxr-xr-x` (755).

Workaround: Use `chmod` to set permissions to 700.

Affected Versions: All CDH versions

Apache Issue: [HDFS-2470](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
java.lang.NullPointerException at
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x

- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler
- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

NodeManager fails because of the changed default location of container executor binary

The default location of container-executor binary and .cfg files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`. Because of this change, if you did not have the mount options `-noexec` and `-nosuid` set on `/opt`, the NodeManager can fail to start up as these options are set on `/var`.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the `-noexec` and `-nosuid` mount options on `/var` or change the container-executor binary and .cdf path using the `CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR` environment variable.

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, Enable Fair Scheduler Continuous Scheduler is turned off by default.

Workaround: Turn off `Enable Fair Scheduler Continuous Scheduling` in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on `Fair Scheduler Assign Multiple Tasks`.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated `mapred-site.xml` that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

Apache HBase Known Issues

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.
2. Find the **Enable Audit Collection** property and clear it.
3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x
- HDP 3.1.5
- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.
 - If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:
 - Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
 - At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x
- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for `hbase-site.xml` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom `hbase-site` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each `RegionServer` under the `RegionServer/Server JMX metrics` endpoint. When short circuit reads are not enabled, this metric will be zero. When short circuit reads are enabled and the data locality for this `RegionServer` is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Default limits for `PressureAwareCompactionThroughputController` are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP
- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x

- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4
- **Workaround:**
 - Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
 - An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

Data loss with restore snapshot

The restore snapshot command causes data loss when the target table was split or truncated after snapshot creation.

Products affected: HBase

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0
- CDH 6.3.0

User affected: Users relying on Restore Snapshot functionality.

Impact: Restored table could have missing data when split or truncate happened after snapshot creation.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not use Restore Snapshot. The same functionality can be achieved if the table is deleted and Clone Snapshot is used instead of restoring a table's state to the snapshot.

```
hbase> disable 'table'
hbase> drop 'table'
hbase> clone_snapshot 'snapshot_name', 'table'
hbase> enable 'table'
```

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-379: Data loss with restore snapshot](#)

CDH users must not use Apache HBase's OfflineMetaRepair tool

OfflineMetaRepair helps you to rebuild the HBase meta table from the underlying file system. This tool is often used to correct meta table corruption or loss. It is designed to work only with hbase-1.x (CDH 5.x). Users must not run the OfflineMetaRepair tool against CDH 6.x since it uses hbase-2.x. If a user runs OfflineMetaRepair tool in CDH 6.x, then it will break or corrupt the HBase meta table.

If you have already corrupted your meta table or you believe your meta table requires the use of something like the former OfflineMetaRepair tool, do not attempt any further changes, contact Cloudera Support.

Products affected: CDH

Releases affected:

- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0
- CDH 6.3.0

User affected: Clusters with HBase installed.

Impact: Cluster becomes inoperable.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not run OfflineMetaRepair tool.

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-376: CDH users must not use Apache HBase's OfflineMetaRepair tool](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a DataNode can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different DataNodes, meaning that there will be one RegionServer per DataNode per HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

IntegrationTestReplication fails if replication does not finish before the verify phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

`ExportSnapshot` or `DistCp` operations may fail on the Amazon `s3a://` protocol

`ExportSnapshot` or `DistCp` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO layer. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

Export to Azure Blob Storage (the `wasb://` or `wasbs://` protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController postOperation problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive/HCatalog/Hive on Spark Known Issues

This topic contains:

- [Hive Known Issues](#)

- [HCatalog Known Issues](#)
- [Hive on Spark Known Issues](#)

Hive Known Issues

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x
- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: `Arithmetic exception [divide by] 0`. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the `SELECT` clause on large values in columns with the data type of `BIGINT` might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are `BIGINT` data types in the `SELECT` clause of the query, incorrect results might be returned. Comparison operators include `==`, `!=`, `<`, `<=`, `>`, and `>=`. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference of values in such columns is out of range for a `LONG` (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 -

(-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a `LONG` (64-bit) data type can hold.

Workaround: Use a `DECIMAL` type instead of `BIGINT` for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the `ORDER BY` clause is not supported for `SELECT *` queries

When column positions are specified in `ORDER BY` clauses, they are not honored for `SELECT *` queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

`ALTER PARTITION ... SET LOCATION` does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use `ALTER PARTITION ... SET LOCATION` on S3 or between S3 and HDFS. The rest of the `ALTER PARTITION` commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Commands run against an Oracle-backed metastore might fail

Commands run against an Oracle-backed Metastore fail with error:

```
javax.jdo.JDODataStoreException Incompatible data type for column TBLS.VIEW_EXPANDED_TEXT
: was CLOB (datastore),
but type expected was LONGVARCHAR (metadata). Please check that the type in the datastore
and the type specified in the MetaData are consistent.
```

This error might occur if the metastore is run on top of an Oracle database with the configuration property `datanucleus.validateColumns` set to `true`.

Workaround: Set `datanucleus.validateColumns=false` in the `hive-site.xml` configuration file.

Affected Versions: All CDH versions

Cannot create archive partitions with external HAR (Hadoop Archive) tables

`ALTER TABLE ... ARCHIVE PARTITION` is not supported on external tables.

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types `Server` and `URI` are not supported in "`SHOW GRANT ROLE roleName on OBJECT objectName`" statements

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

Logging differences create Supportability Issues

In the event you need Apache Hive support from Cloudera, the availability of logs is critical. Some CDH releases do not enable `log4j2` logging for Hive by default. Because of this, logs are not generated. Furthermore, the specified CDH releases are not configured to remove old log files to make room for new ones. This can cause the new logs to be lost. When Hive logs are missing, Support cannot troubleshoot Hive problems efficiently.

Components affected: Hive

Products affected: Hive

Releases affected:

- CDH 6.1
- CDH 6.2
- CDH 6.3

Users affected: Hive users

Severity: Medium

Impact: The absence of Hive log files causes delays in troubleshooting Hive problems.

Action required: Manually configure `log4j2` logging, and delete old log files to make room for new ones.

1. Open Cloudera Manager.
2. Select **Clusters > HIVE**.
3. Click the **Configuration** tab.
4. In the Search field, enter Hive Metastore Server Logging Advanced Configuration Snippet (Safety Valve).
5. Add the following XML to the field (or switch to Editor mode, and enter each property and its value in the fields provided).

```
<property>
  <name>rootLogger.appenderRefs</name>
  <value>root, console, DRFA, PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.name</name>
  <value>org.apache.hadoop.hive.ql.log.PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.level</name>
  <value>DEBUG</value>
</property>
<property>
  <name>appender.DRFA.filePattern</name>
  <value>${log.dir}/${log.file}.%i</value>
</property>
<property>
  <name>appender.DRFA.strategy.fileIndex</name>
  <value>min</value>
</property>
```

6. In the Search field, enter HiveServer2 Logging Advanced Configuration Snippet (Safety Valve).
7. Add the XML properties from step 5.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-384: Logging differences in CDH 6 create Supportability Issues](#)

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

Hive on Spark (HoS) Known Issues

A query fails with `IllegalArgumentException` Size requested for unknown type: `java.util.Collection`

An example of a query that fails due to this issue is:

```
WITH t2 AS
(SELECT array(1,2) AS c1
UNION ALL SELECT array(2,3) AS c1)
SELECT collect_list(c1)
FROM t2
```

Workaround: Create a table to store the array data.

Affected Versions: 6.3.x, 6.2.x, 6.1.x

Cloudera Issue: CDH-80169

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form "client.RpcRetryingCaller: Call exception...", then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hue Known Issues

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - The *Add Description* field in the Table schema browser does not sanitize user inputs as expected.
- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower
- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower

- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls

Issuing DDL statements using Hue's Impala editor or invoking Hue's "Refresh Cache" function in the left-side metadata browser results in Hue issuing INVALIDATE METADATA calls to the Impala service. This call is expensive and can result in a significant system impact, up to and including full system outage, when repeated in sufficient volume. This has been corrected in HUE-8882.

Components affected:

- Hue
- Impala

Products affected:

- Cloudera Enterprise 5
- Cloudera Enterprise 6

Releases affected:

- CDH 5.15.1, 5.15.2
- CDH 5.16.x
- CDH 6.1.1
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: End-users using Impala editor in Hue.

Severity: High

Impact: Users running DDL statements using the Hue Impala editor or invoking Hue's Refresh Cache function causes INVALIDATE METADATA commands to be sent to Impala. Impala's metadata invalidation is an expensive operation and could cause impact on the performance of subsequent queries, hence leading to the potential for significant impact on the entire cluster, including the potential for whole-system outage.

Action required:

- CDH 6.x customers: Upgrade to CDH 6.3.4 that contains the fix.

- CDH 5.x customers: Contact Cloudera Support for further assistance.

Apache issue: [HUE-8882](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: High DDL usage in Hue Impala Editor may issue flood of INVALIDATE Calls](#)

Hue Silently Disables StartTLS in LDAP Connections

There are two mechanisms to secure communication to an LDAP server. One is to use an 'ldaps' connection, where all traffic is encrypted inside a TLS tunnel - much like 'https'. The other is to use 'StartTLS', where traffic begins unencrypted in the "ldap" protocol and then upgrades itself to a TLS connection.

If StartTLS is enabled in the Hue configuration but the 'ldap_cert' parameter is not configured, then Hue silently disables StartTLS.

StartTLS will not be used for synchronization or import, even if StartTLS is enabled and the 'ldap_cert' parameter is set.

The result is that connections that the administrator assumes to be secured, using StartTLS, are not actually secure.

CVE: CVE-2019-19146

Date/time of detection: 22nd March, 2019

Detected by: Ben Gooley, Cloudera

Severity (Low/Medium/High): 8.8 High [CVSS AV:N/AC:L/PR:N/UI:R/S:U/C:H/I:H/A:H](#)

Products affected: CDH

Releases affected:

- CDH 5.x
- CDH 6.1.0
- CDH 6.1.1
- CDH 6.2.0
- CDH 6.2.1
- CDH 6.3.0

Users affected: All users who are using StartTLS enabled in the Hue configuration when using LDAP as Authentication Backend to login in Hue.

Impact: Sensitive data exposure.

Immediate action required:

- **Upgrade (recommended):** Update to a version of CDH containing the fix.
- **Workaround:** Use "ldaps" instead of "ldap" and StartTLS.

Addressed in release/refresh/patch: CDH 6.3.1 and above

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-371: Hue Silently Disables StartTLS in LDAP Connections](#)

Hue allows unsigned SAML assertions

If Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

Products affected: Hue, CDH

Releases affected:

- CDH 5.15.x and earlier
- CDH 5.16.0, 5.16.1
- CDH 6.0.x

- CDH 6.1.x

User affected: All users who are using SAML with Hue.

CVE: CVE-2019-14775

Date/time of detection: January 2019

Detected by: Joel Snape

Severity (Low/Medium/High): High

Impact:

This is a significant security risk as it allows anyone to fake their access validity and therefore access Hue, even if they should not have access. In more detail: if Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

CVE: CVE-2019-14775

Immediate action required:

- **Upgrade (recommended):** Upgrade to a version of CDH containing the fix.
- **Workaround:** None

Addressed in release/refresh/patch:

- CDH 5.16.2
- CDH 6.2.0

Hue does not support the Spark App

Hue does not currently support the Spark application.

Logs are not updating in /var/log/hue after upgrading to CDH 6

After upgrading to CDH 6 if you check the logs in /var/log/hue and note that they are not being updated, this means that the alternatives link was lost during the upgrade.

Workaround: To resolve this issue, open a terminal window and perform the following on every Hue server:

For RHEL/Centos:

```
/usr/sbin/alternatives --install /etc/hue/conf hue-conf  
/opt/cloudera/parcels/CDH/etc/hue/conf.empty 10
```

For SLES:

```
/usr/sbin/update-alternatives --install /etc/hue/conf hue-conf  
/opt/cloudera/parcels/CDH/etc/hue/conf.empty 10
```

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname` only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \{(string\) [=:].*\}`. And the replacement could be for example: `secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

.

Products affected:

- CDP Private Cloud Base

- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: CVE-2021-28131

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Authenticated user with access to active session or query id can hijack other Impala session or query

If an authenticated Impala user supplies a valid query id to Impala's HS2 and Beeswax interfaces, they can perform operations on other sessions or queries when normally they do not have privileges to do so.

Releases affected:

- CDH 5.16.x and lower
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0

Users affected: All Impala users of affected versions.

Date/time of detection: 21st May 2019

Severity (Low/Medium/High): 7.5 (High) ([CVSS 3.0: AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:N/A:N](#))

Impact: Neither the original issue or the fix affect the normal use of the system.

CVE: CVE-2019-10084

Immediate action required: There is no workaround, upgrade to a version of CDH containing the fix.

Addressed in release/refresh/patch: CDH 6.2.1 and higher versions

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

System-wide auth-to-local mapping not applied correctly to Kudu service account

Due to system `auth_to_local` mapping, the principal may be mapped to some local name.

When running with Kerberos enabled, you may hit the following error message where `<random-string>` is some random string which doesn't match the primary in the Kerberos principal.

```
WARNINGS: TransmitData() to X.X.X.X:27000 failed: Remote error: Not authorized:
{username='<random-string>', principal='impala/redacted'} is not allowed to access
DataStreamService
```

Workaround: Start Impala with the `--use_system_auth_to_local=false` flag to ignore the system-wide `auth_to_local` mappings configured in `/etc/krb5.conf`.

Affected Versions: CDH 5.15, CDH 6.1 and higher

Apache Issue: [KUDU-2198](#)

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate
section memory!
terminate called after throwing an instance of
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>
>'
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max
echo 2000000 > /proc/sys/kernel/pid_max
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)

Breakpad minidumps can be very large when the thread count is high

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the `impalad` daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Timestamp type-casted to varchar in a binary predicate can produce incorrect result

In an Impala query the timestamp can be type-casted to a varchar of smaller length to convert a timestamp value to a date string. However, if such Impala query is used in a binary comparison against a string literal, it can produce incorrect results, because of a bug in the expression rewriting code. The following is an example of this:

```
> select * from (select cast('2018-12-11 09:59:37' as timestamp) as ts) tbl where cast(ts
  as varchar(10)) = '2018-12-11';
```

The output will have 0 rows.

Affected version:

- CDH 5.15.0, 5.15.1, 5.15.2, 5.16.0, 5.16.1
- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed versions:

- CDH 5.16.2
- CDH 6.2.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-358: Timestamp type-casted to varchar in a binary predicate can produce incorrect result](#)

Incorrect result due to constant evaluation in query with outer join

An `OUTER JOIN` query could omit some expected result rows due to a constant such as `FALSE` in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
  INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
  RIGHT JOIN alltypes a3 ON a1.year = a1.bigint_col;
+-----+
| Explain String |
```

```
Estimated Per-Host Requirements: Memory=1.00KB VCores=1
00:EMPTYSET
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a `LIKE` operator is an escaped `\%` character, it does not match a `%` final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: `impala::Coordinator::ValidateCollectionSlots`

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Metadata

These issues affect how Impala interacts with metadata. They cover areas such as the metastore database and the Impala Catalog Server daemon.

Concurrent catalog operations with heavy DDL workloads can cause queries with `SYNC_DDL` to fail fast

When Catalog Server is under a heavy load with concurrent catalog operations of long running DDLs, queries running with the `SYNC_DDL` query option can fail with the following message:

```
ERROR: CatalogException: Couldn't retrieve the catalog topic
version for the SYNC_DDL operation after 3 attempts.The operation has
been successfully executed but its effects may have not been
broadcast to all the coordinators.
```

The catalog operation is actually successful as the change has been committed to HMS and Catalog Server cache, but when Catalog Server notices a longer than expected time for it to broadcast the changes, it fails fast.

The coordinator daemons eventually sync up in the background.

Affected Versions: CDH versions 6.0 and 6.1

Apache Issue: [IMPALA-7961](#) / CDH-76345

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Configuration needed for Flume to be compatible with Impala

For compatibility with Impala, the value for the Flume HDFS Sink `hdfs.writeFormat` must be set to `Text`, rather than its default value of `Writable`. The `hdfs.writeFormat` setting must be changed to `Text` before creating data files with Flume; otherwise, those files cannot be read by either Impala or Hive.

Resolution: This information has been requested to be added to the upstream Flume documentation.

Affected Versions: All CDH 6 versions

Cloudera Issue: CDH-13199

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null", "string"]` instead of `["string", "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Set limits on size of expression trees

Very deeply nested expressions within queries can exceed internal Impala limits, leading to excessive memory usage.

Workaround: Avoid queries with extremely large expression trees. Setting the query option `disable_codegen=true` may reduce the impact, at a cost of longer query runtime.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4551](#)

Impala does not support running on clusters with federated namespaces

Impala does not support running on clusters with federated namespaces. The `impalad` process will not start on a node running such a filesystem based on the `org.apache.hadoop.fs.viewfs.ViewFs` class.

Workaround: Use standard HDFS on all Impala nodes.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-77](#)

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for `impalad_flags`** to specify the load balancer address with the HiveServer2 port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

Casting scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala Parser issue when using fully qualified table names that start with a number

A fully qualified table name starting with a number could cause a parsing error. In a name such as `db.571_market`, the decimal point followed by digits is interpreted as a floating-point number.

Workaround: Surround each part of the fully qualified name with backticks (```).

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.2.0

Apache Issue: [IMPALA-941](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: All CDH 6 versions

Apache Kafka Known Issues

Potential to bypass transaction and idempotent ACL checks in Apache Kafka

It is possible to manually craft a Produce request which bypasses transaction and idempotent ACL validation. Only authenticated clients with Write permission on the respective topics are able to exploit this vulnerability.

Products affected:

- CDH
- CDK Powered by Apache Kafka

Releases affected:

- CDH versions 6.0.x, 6.1.x, 6.2.0
- CDK versions 3.0.x, 3.1.x, 4.0.x

Users affected: All users who run Kafka in CDH and CDK.

Date/time of detection: September, 2018

Severity (Low/Medium/High): 7.1 (High) ([CVSS:3.0/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:H/A:H](#))

Impact: Attackers can exploit this issue to bypass certain security restrictions to perform unauthorized actions. This can aid in further attacks.

CVE: CVE-2018-17196

Immediate action required: Update to a version of CDH containing the fix.

Addressed in release/refresh/patch:

- CDH 6.2.1, 6.3.2
- CDK 4.1.0

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-378: Potential to bypass transaction and idempotent ACL checks in Apache Kafka](#)

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to `true`.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: KAFKA-2561

Cloudera Issue: None

Kafka Broker Fails to Start Due to Slow Sentry and HMS startup

This issue is encountered on cluster startup and is caused by misalignment between Kafka, Sentry, and HMS. The slow startup of HMS slows down Sentry startup which consequently makes the Kafka connection to Sentry time out. Ultimately, the Kafka broker will be unable to start.

Workaround: Manually increase the number of remote procedure call retries between Sentry and Kafka through the **Sentry Client Advanced Configuration Snippet (Safety Valve) for `sentry-site.xml`** property.

1. Go to **Sentry > Configuration** and find the **Sentry Client Advanced Configuration Snippet (Safety Valve) for `sentry-site.xml`** property.
2. Click on the add button.
3. Enter the following data:
 - Name: `sentry.service.client.rpc.retry-total`
 - Value: 20
4. Enter a **Reason for change**, and then click **Save Changes** to commit the changes.
5. Return to the Home page by clicking the Cloudera Manager logo.
6. Click the restart stale services icon next to the Sentry service to invoke the cluster restart wizard.
7. Click **Restart Stale Services**.
8. Click **Restart Now**.
9. Click **Finish**.

Affected Versions: CDH 6.1.0 and higher

Fixed Versions: N/A

Cloudera Issue: CDH-74713

Kafka JMX Tool Cannot Connect to JMX

The Kafka JMX tool cannot connect to the JMX agent of the Kafka Broker or MirrorMaker if the specified address of the JMX remote connector is bound to 127.0.0.1.

Workaround:

1. In Cloudera Manager go to **Kafka > Instances** and select the affected broker.

2. Find the **Additional Broker Java Options** and **Additional MirrorMaker Java Options** properties and add the following Java option to the configuration:

```
-Djava.rmi.server.hostname=127.0.0.1
```



Note: Configuring the **Additional MirrorMaker Java Options** property is only required if you are using JMX with MirrorMaker.

3. Restart the affected brokers.

Affected Versions: CDH 6.0.0 and higher

Fixed Versions: CDH 6.2.0

Cloudera Issue: OPSAPS-48695

The Idempotent and Transactional Capabilities of Kafka are Incompatible with Sentry

The idempotent and transactional capabilities of Kafka are not compatible with Sentry. The issue is due to Sentry being unable to handle authorization policies for Kafka transactions. As a result, users cannot use Kafka transaction in combination with Sentry.

Workaround: Use the Sentry super user in applications where idempotent producing is a requirement or disable Sentry.

Affected Versions: CDK 4.0 and later, CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.3.0

Fixed Versions: CDH 6.2.1, 6.3.1

Apache Issue: N/A

Cloudera Issue: CDH-80606

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions: All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

Apache Kudu Known Issues

The following are known bugs and issues in Kudu. Note that this list is not exhaustive, and is meant to communicate only the most important known issues.

Kudu Masters unable to join back after a restart

In a multi master Kudu environment, if a master is restarted or goes offline for a few minutes, it can occasionally have trouble joining the cluster on startup. For example, if this happens in case of three kudu masters, and one of the other two masters is stopped or dies during this time, then the overall Kudu cluster is down because the majority of the masters are not running.

This issue is resolved by the [KUDU-2748](#) upstream JIRA.

Products affected: Apache Kudu

Affected version:

- CDH 5.14.0, 5.14.2, 5.14.4
- CDH 5.15.0, 5.15.1, 5.15.2
- CDH 5.16.1, 5.16.2
- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0, 6.2.1

Fixed version:

- CDH 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-442: Kudu Masters unable to join back after a restart](#)

Inconsistent rows returned from queries in Kudu

Due to KUDU-2463, upon restarting Kudu, inconsistent rows may be returned from tables that have not recently been written to, resulting in any of the following:

- multiple rows for the same key being returned
- deleted data being returned
- inconsistent results consistently being returned for the same query

If this happens, you have two options to resolve the conflicts: write to the affected Kudu partitions by:

- re-deleting the known and deleted data
- upserting the most up-to-date version of affected rows.

Products affected: Apache Kudu

Affected version:

- CDH 5.12.2, 5.13.3, 5.14.4, 5.15.1, 5.16.1
- CDH 6.0.1, 6.1.0, 6.1.1

Fixed version:

- CDH 5.16.2
- CDH 6.2.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-353: Inconsistent rows returned from queries in Kudu](#)

C++ Client Fails to Re-acquire Authentication Token in Multi-master Clusters

A security-related issue can cause Impala queries to start failing on busy clusters in the following scenario:

- The cluster runs with the `--rpc_authentication` set as `optional` or `required`. The default is `optional`. Secure clusters use `required`.
- The cluster is using multiple masters.
- Impala queries happen frequently enough that the leader master connection to some `impalad` isn't idle-closed (more than 1 query per 65 seconds).
- The connection stays alive for longer than the authentication token timeout (1 week by default).
- A master leadership change occurs after the authentication token expiration.

Impala queries will start failing with errors in the `impalad` logs like:

```
I0904 13:53:08.748968 95857 client-internal.cc:283] Unable to determine the new leader
Master: Not authorized: Client connection negotiation failed: client connection to
10.164.44.13:7051: FATAL_INVALID_AUTHENTICATION_TOKEN: Not authorized: authentication
token expired
I0904 13:53:10.389009 95861 status.cc:125] Unable to open Kudu table: Timed out:
GetTableSchema timed out after deadline expired
@ 0x95b1e9 impala::Status::Status()
@ 0xff22d4 impala::KuduScanNodeBase::Open()
@ 0xff101e impala::KuduScanNode::Open()
@ 0xb73ced impala::FragmentInstanceState::Open()
@ 0xb7532b impala::FragmentInstanceState::Exec()
@ 0xb64ae8 impala::QueryState::ExecFInstance()
@ 0xd15193 impala::Thread::SuperviseThread()
@ 0xd158d4 boost::detail::thread_data<>::run()
@ 0x129188a (unknown)
@ 0x7f717ceade25 start_thread
@ 0x7f717cbdb34d __clone
```

Impala shell queries will fail with a message like:

```
Unable to open Kudu table: Timed out: GetTableSchema timed out after deadline expired
```

Workaround:

- Restart the affected Impala Daemons. Restarting a daemon ensures the problem will not reoccur for at least the authentication token lifetime, which defaults to one week.
- Increase the authentication token lifetime (`--authn_token_validity_seconds`). Beware that raising this lifetime increases the window of vulnerability of the cluster if a client is compromised. It is recommended that you keep the token lifetime at one month maximum for a secure cluster. For unsecured clusters, a longer token lifetime is acceptable, and a 3 month lifetime is recommended.

Affected Versions: From CDH 5.11 through CDH 6.0.1

Apache Issue: [KUDU-2580](#)

Timeout Possible with Log Force Synchronization Option

If the Kudu master is configured with the `-log_force_fsync_all` option, tablet servers and clients will experience frequent timeouts, and the cluster may become unusable.

Affected Versions: All CDH 6 versions

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Fault Tolerant Scan Memory Issue

Unlike regular scans, fault tolerant scans will allocate all required memory when the scan begins rather than as it progresses. This can be significant for big tablets. Moreover, this memory usage isn't counted towards the tablet server's overall memory limit, raising the likelihood of the tablet server being out-of-memory killed by the kernel.

Affected Versions: CDH 6.2 / Kudu 1.9 and lower

Apache Issue: [KUDU-2466](#)

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used due to a sys table change in PostgreSQL from version 9.5 to 9.6. The failure only happens if Oozie uses a JDBC driver earlier than 9.4.1209.

Workaround:

1. After the parcels of the new version are distributed, replace the PostgreSQL JDBC driver with a newer one (version 9.4.1209 or higher) in the new parcel, at the following locations:

- `/opt/cloudera/parcels/${newparcel.version}/lib/oozie/lib/`
- `/opt/cloudera/parcels/${newparcel.version}/lib/oozie/libtools/`

2. Perform the upgrade.



Note: If you already started the upgrade and the process stops with an error message about missing columns, you can change the drivers at that point of the process as well, and resume the upgrade.

If your cluster is installed from packages, you must change the drivers at the following locations:

- `/usr/lib/oozie/libtools/`
- `/usr/lib/oozie/lib/`



Note: You can change the driver after the packages installation, but before running the CDH upgrade wizard. You can also do it during the update process, when the error occurs.

You can download the driver from the [PostgreSQL JDBC driver homepage](#).

Affected Versions: CDH 6.0.0 and higher

Fixed Version: CDH 6.2.1 and higher

Cloudera Issue: CDH-75951

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in Parquet.

Apache Pig Known Issues

There are no known issues in this release.

Cloudera Search Known Issues

The current release includes the following known limitations:

Processing UpdateRequest with delegation token throws NullPointerException

When using the Spark Crunch Indexer or another client application which utilizes the SolrJ API to send Solr Update requests with delegation token authentication, the server side processing of the request might fail with a NullPointerException.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Apache Issue: SOLR-13921

Cloudera Issue: CDH-82599

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

HBase Lily indexer might fail to write role log files

In certain scenarios the HBase Lily Indexer (Key-Value Store Indexer) fails to write its role log files.

Workaround: None

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82342

Adding a new indexer instance to HBase Lily Indexer fails with GSSEException

When Kerberos authentication is enabled and adding a new indexer instance to HBase Lily Indexer (Key-Value Store Indexer), the authentication might fail when Lily is communicating to the HBase Master process, throwing a similar Exception:

```
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSEException: No valid
credentials provided (Mechanism level: Failed to find any Kerberos tgt)]
```

Workaround: Ensure that the Lily indexer has a Sentry dependency configured by following these steps:

1. Go to **Cloudera Manager > Key-Value Store indexer > Configuration**.
2. Make sure the **Sentry Service** configuration option points to a Sentry service instance instead of **none**.

The workaround does not require defining any Sentry roles or privileges, it is just to trigger a code execution path which will authenticate the HBase service user.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82566

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with CrunchIndexerTool, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the MapReduceIndexerTool nor the HBaseMapReduceIndexerTool

The MapReduceIndexerTool and the HBaseMapReduceIndexerTool can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the MapReduceIndexerTool or HBaseMapReduceIndexerTool. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the “Browse” and “Spell” Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irreversibly corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool` multiple times may produce duplicate entries in a collection.

Repeatedly running the `MapReduceIndexerTool` on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the `HBaseMapReduceIndexerTool` unless it is run with more than zero reducers.

Workaround: To avoid this issue, use `HBaseMapReduceIndexerTool` with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139

Apache Sentry Known Issues

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

When granting privileges, a single transaction per grant causes long delays

Sentry takes a long time to grant or revoke a large number of column-level privileges that are requested in a single statement. For example if you execute the following command:

```
GRANT SELECT(col1, col2, ...) ON TABLE table1;
```

Sentry applies the grants to each column separately and the refresh process causes long delays.

Workaround: Split the grant statement up into smaller chunks. This prevents the refresh process from causing delays.

Affected Versions:

- CDH: 5.14.4
- CDH: 5.15.1
- CDH: 5.16.0
- CDH: 6.1.0

Fixed Versions:

- CDH 5.16.1 and above
- CDH 6.2.0 and above

Cloudera Issue: CDH-74982

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.

Affected Versions:

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694

GRANT/REVOKE operations could fail if there are too many concurrent requests

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.

Affected Versions: CDH 5.13.0 and above

Apache Issue: [SENTRY-1855](#)

Cloudera Issue: CDH-56553

Creating large set of Sentry roles results in performance problems

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.

Affected Versions: CDH 5.13.0 and above

Cloudera Issue: CDH-59010

Users can't track jobs with Hive and Sentry

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above

Cloudera Issue: CDH-22890

Column-level privileges are not supported on Hive Metastore views

GRANT and REVOKE for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

SELECT privilege on all columns does not equate to SELECT privilege on table

Users who have been explicitly granted the `SELECT` privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as `SELECT COUNT (1)` or `SELECT COUNT (*)` will not work even if you have the `SELECT` privilege on all columns.

There is one exception to this. The `SELECT * FROM TABLE` command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The `EXPLAIN SELECT` operation works without table or column-level privileges

Users are able to run the `EXPLAIN SELECT` operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types `Server` and `URI` are not supported in `SHOW GRANT ROLE roleName on OBJECT objectName`

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|--------------------------|---------------------------------|
| hdfs://absolute/path/ | hdfs://relative/path |
| s3a://bucketname/ | s3a://bucketname |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6.1.x. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

Shuffle+Repartition on a DataFrame could lead to incorrect answers

When a repartition follows a shuffle, the assignment of rows to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input rows than the original computation. As a result, some rows can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2
- CDS 2.2.0 release 1, release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-3: Shuffle+Repartition on a DataFrame could lead to incorrect answers](#)

Shuffle+Repartition on an RDD could lead to incorrect answers

When a repartition follows a shuffle, the assignment of records to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input records than the original computation. As a result, some records can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2, release 3
- CDS 2.2.0 release 1, release 2, release 3
- CDS 2.3.0 release 1, release 2, release 3

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 4
- CDS 2.2.0 release 4
- CDS 2.3.0 release 4

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-4: Shuffle+Repartition on an RDD could lead to incorrect answers](#)

RDD.repartition() has different failure handling in Spark 2.4 and may cause job failures

The `RDD.repartition()` transformation, which reshuffles data in the RDD randomly to create either more or fewer partitions and then balances it across the partitions, was using a round-robin method to distribute data that caused incorrect answers to be returned for RDD jobs. This issue has been corrected, but it introduced a behavior change in RDD job failure handling. Now, Spark actively fails a job if there is a fetch failure that was caused by a node failure after repartitioning.

Workaround: Use the `RDD.checkpoint()` method to save the intermediate RDD data to HDFS. First, call `SparkContext.setCheckpointDir(directory: String)` to set the checkpoint directory where the intermediate data will be saved. Note that the directory must be an HDFS path. Then mark the RDD for checkpointing by calling `RDD.checkpoint()` when you use the `RDD.repartition()` transformation.

Apache Issue: [SPARK-23243](#)

Cloudera Issue: CDH-76413

Spark Streaming write-ahead logs do not run on HDFS directories with Erasure Coding enabled

Spark Streaming write-ahead logs (WALs) cannot run on HDFS directories when Erasure Coding is enabled. Erasure Coding does not support `hflush()`, `hsync()`, and `append()`, which prevents the WALs from running.

Workaround: Configure Spark Streaming with a checkpoint directory that does not have Erasure Coding enabled on it. You can set the checkpoint directory with `ssc.checkpoint("directory_name")`. For example:

```
ssc.checkpoint("_checkpoint")
```

Affected Versions: CDH 6.1.0

Fixed Versions: CDH 6.2.0

Apache Issue: [SPARK-26094](#)

Cloudera Issue: CDH-61127

Structured Streaming exactly-once fault tolerance constraints

In Spark Structured Streaming, the exactly-once fault tolerance for `file sink` is valid only for files that are in the manifest. These files are located in the `_spark_metadata` subdirectory of the `file sink` output directory. Only process files that have file names starting with digits. Other temporary files can also appear in this directory, but they should not be processed. Typically, these temporary file names start with a period (".").

You can list the valid manifest files, excluding the temporary files, by using a command like the following, which assumes your output directory is located at `/tmp/output`. As the appropriate user, run the following command to list the valid manifest files:

```
hadoop fs -ls /tmp/output/_spark_metadata/[0-9]*
```

Workaround: None

Affected Versions: CDH 6.1.0 and higher

Cloudera Issue: CDH-75191

Spark SQL does not respect size limit for the varchar type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Spark SQL does not respect Sentry ACLs when communicating with Hive metastore

Even if user is configured via Sentry to not have read permission to a Hive table, a Spark SQL job running as that user can still read the table's metadata directly from the Hive metastore. **Cloudera Issue:** CDH-76468

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's client mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

Apache Sqoop Known Issues

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (doc import + --as-parquetfile) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (sqoop import --as-parquetfile) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \$CONDITIONS" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/5dbcac42-5d69-4e46-88c2-17dbedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a --target-dir which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

There are no known issues in this release.

CDH 6.1.0 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for CDH 6.1.0:

New Features in CDH 6.1.0

See below for new features in CDH 6.1.0, grouped by component:

Apache Accumulo

Running Apache Accumulo on top of a CDH 6.1.x cluster is supported. Apache Accumulo is shipped separately from CDH.

Apache Avro

There are no notable new features in this release.

Apache Crunch

There are no notable new features in this release.

Apache Flume

The following list shows what's new and changed in Apache Flume for CDH 6.1.0:

- Flume JMS support for TLS connections including client certificate authentication. For details, see [Configuring TLS/SSL for Flume JMS Source](#).
- Flume Auto-TLS support. For details, see [Configuring TLS/SSL for Flume](#).

Apache Hadoop

Hadoop Common

There are no notable new features in this release.

HDFS

ADLS Gen2

CDH supports using ADLS Gen2 as a storage layer for MapReduce, Hive on MapReduce, Hive on Spark, Spark, Oozie, and Impala.

For more information, see the ADLS Gen2 documentation. For information about configuring CDH and ADLS Gen2, see [Configuring ADLS Gen2 Connectivity](#).

Google Cloud Storage

CDH supports using Google Cloud Storage (GCS) as a storage layer for Hive, MapReduce, and Spark. To use GCS, you must download the connector and distribute it to your cluster. For more information about how to do this and limitations, see [Configuring Google Cloud Storage Connectivity](#).

CacheReplicationMonitor

You can now disable the CacheReplicationMonitor with the following **Advanced Configuration Snippet (Safety Valve) for `hdfs-site.xml`**: `dfs.namenode.caching.enabled`. To maintain backwards compatibility, the default value is `true` to enable the default caching. To disable the CacheReplicationMonitor, set the value to `false` when you add the **Advanced Configuration Snippet (Safety Valve) for `hdfs-site.xml`**:

Erasure Coding

CDH 6.1.0 supports Erasure Coding (EC). EC is an alternative to the standard 3x replication that HDFS uses by default. When an HDFS cluster uses EC, no additional direct copies of the data are generated. Instead, data is striped into blocks and encoded to generate parity blocks. If there are any missing or corrupt blocks, HDFS uses the remaining data and parity blocks to reconstruct the missing pieces in the background. This process provides a similar level of data durability to 3x replication but at a lower storage cost.

For more information, see [Data Durability](#).

Snapshots

You can now enable immutable snapshots for HDFS with Cloudera Manager. Enabling this feature also enables snapshot diff-based copy listing for BDR.

In the **Cloudera Manager Admin Console**, navigate to **Clusters > <HDFS cluster> > Configuration** and search for **Enable Immutable Snapshots**.

This feature is off by default.

MapReduce

There are no notable new features in this release.

YARN

There are no notable new features in this release.

Apache HBase

Replication Status of WAL Groups in Web UI

New sections are added to Web UI to show the status of replication:

- **Peers:** Shows all replication peers and some of their configuration, including peer id, cluster key, state, bandwidth, the size of current log, the log queue size, the replication offset and which namespace or table it replicates.
- **Replication status of all Region Server:** Shows the delay of replication, including the `AgeOfLastShippedOp`, `SizeOfLogQueue` and `ReplicationLag` for each Region Server.

If the replication offset shows -1 and replication delay is UNKNOWN, that means replication is not started. There are two common reasons for this: the peer is disabled or the `replicationEndpoint` is sleeping.

Default Behavior Change

[HBASE-20856](#): By default the meta WAL provider (`hbase.wal.meta_provider`) is set to the same as the normal WAL (`hbase.wal.provider`).

Apache Hive / Hive on Spark / HCatalog

Apache Hive

The following are some of the notable new features in this release of Hive:

Erasure Coding Support

You can now use Erasure Coding (EC) with your infrequently accessed Hive tables and partitions. Learn how to plan, evaluate, and activate Erasure Coding in our [Best Practices for Using Hive with Erasure Coding](#) guide.

Query Plan Graph View for Hive Web UI

You can now view your query plans on an informative and visual graph. Learn how to activate the graph view, start understanding your query plans, follow the MapReduce progress bar, and pinpoint errors easily with the [Query Plan Graph View for Hive Web UI](#).

Fine Grained Privileges

Sentry and Hive introduced fine grained privileges to provide object-level privileges to roles.

Fine grained privileges adds the `CREATE` privilege, which allow users to create databases and tables. See the [Sentry Privileges](#) documentation for more information about the new privileges.

Object Ownership

Object ownership designates an owner for a database, table, or view in Sentry. The owner of an object has the equivalent of the `ALL` privilege on the object. See the [Object Ownership](#) documentation for information about enabling object ownership.

Because of the new object ownership feature, HMS stores the user that creates a table or database in Hive as the object owner. If object ownership is enabled, Sentry grants the user the `OWNER` privilege. Whether or not object ownership is enabled, HMS stores the user that creates the object as the object owner. Previously, HMS stored the `hive` user as the object owner.

The following statements were added to Hive to support object ownership via Sentry:

- `ALTER DATABASE SET OWNER`
- `ALTER TABLE SET OWNER`
- `SHOW GRANT USER`

Hive on Spark

There are no notable new features in this release.

Hue

The following are some of the notable new features in this release of Hue:

- Language Reference built-in, Column Sampling, black theme for Editor
- Simplifying the end user Data Catalog search
- Improved SQL Exploration

For more information, see <http://gethue.com/additional-sql-improvements-in-hue-4-3/>.

Apache Impala

Enhancements in Authorization

Fine-grained Privileges

Sentry and Impala introduced fine-grained privileges to provide object-level privileges to roles.

Fine-grained privileges include the `REFRESH` and `CREATE` privileges, which allow users to create databases and tables, and to execute commands that update metadata information on Impala databases and tables. See [Impala Sentry documentation](#) for the new privileges and the scopes of the objects that you can grant the new privileges on.

The following new privileges were added:

- The `REFRESH` privilege
- The `CREATE` privilege
- The `SELECT` and `INSERT` privileges on `SERVER`

If a role has `SELECT` or `INSERT` privilege on an object in Impala before upgrading to CDH 6.1, that role will automatically get the `REFRESH` privilege during the upgrade.

Object Ownership

Object ownership designates an owner for a database, table, or view in Sentry. The owner of an object has the `OWNER` privilege which is the equivalent of the `ALL` privilege on the object. See [Object Ownership](#) for information about enabling object ownership.

If the object ownership feature is enabled, Sentry grants the user the `OWNER` privilege. Whether or not object ownership is enabled, HMS stores the object creator as the default object owner. Previously, HMS stored the Kerberos user as the object owner.

The following statements were added in Impala to support object ownership via Sentry:

- `ALTER DATABASE SET OWNER`
- `ALTER TABLE SET OWNER`
- `ALTER VIEW SET OWNER`
- `SHOW GRANT USER`

Enhancements in Admission Control and Resource Management

The following is a list of noteworthy improvements made in Impala in resource management and admission control.

- Starting in CDH 6.1 / Impala 3.1, Impala automatically chooses how much memory to give a query based on the memory estimate from the planner and bounded by the min/max guardrails that you configure for resource pools. In previous versions, you were required to set a single memory limit (via the `mem_limit` setting) per resource pool.

The following new resource pool settings can be configured in Cloudera Manager or in the admission control configuration files:

- Minimum Query Memory Limit (`min-query-mem-limit`)
- Maximum Query Memory Limit (`max-query-mem-limit`)
- Clamp `MEM_LIMIT` Query Option (`clamp-mem-limit-query-option`)

See [Admission Control and Query Queuing](#) for detail information.

- Improvements to prevent scan operators running out of memory in many more scenarios.
- Many improvements for more accurate memory estimates in admission control.
- New query options to reject complex queries.

The options are enforced by admission control based on planner resource requirements and the schedule.

- [THREAD_RESERVATION_LIMIT](#) limits the total number of reserved threads in fragments scheduled on a single backend.
- [THREAD_RESERVATION_AGGREGATE_LIMIT](#) limits the sum of reserved threads across all fragments.

IANA Time Zones Support

Now you have an option to customize time zone databases in Impala with well-known sources, such as IANA.

- The `--hdfs_zone_info_zip` startup flag specifies the path to a zip archive that contains the IANA time zone database. The default location of the time zone database is the `/usr/share/zoneinfo` folder. See [Customizing Time Zones](#) for more information and the steps to set the flag.
- The `--hdfs_zone_alias_conf` startup flag specifies the path to a configuration file that contains definitions for non-standard timezone aliases. See [Customizing Time Zones](#) for more information and the steps to set the flag.
- The new [TIMEZONE Query Option \(CDH 6.1 / Impala 3.1 or higher only\)](#) query option defines the local time zone to be used for conversions between UTC and the local time. By default, the coordinator node's time zone is used as the local time zone. See [TIMESTAMP Data Type](#) for detail.

General Performance Improvements

A new query option, [SHUFFLE_DISTINCT_EXPRS](#), controls the shuffling behavior when a query has both grouping and distinct expressions.

Metadata Performance Improvements

- Incremental Stats

The following enhancements improve Impala stability. The features reduce chances of having `catalogd` and `impalad` crash due to be out of memory when using incremental stats.

- Incremental stats are now compressed in memory in `catalogd`, reducing memory footprint in `catalogd`.
- Incremental stats are fetched on demand from `catalogd` by `impalad` coordinators. This enhancement reduces memory footprint for `impalad` coordinators and `statedored` and also reduces network requirements to broadcast metadata.

See [#unique_3172](#) for details.

- Automatic Invalidation of Metadata



Note: This feature is experimental and not recommended for use in production clusters.

To keep the size of metadata bounded and to reduce the chances of `catalogd` cache running out of memory, this release introduces an automatic metadata invalidation feature with time-based and memory-based invalidation.

Automatic invalidation of metadata provides more stability with lower chances of running out of memory, but could potentially cause performance risks. The feature is turned off by default.

See [#unique_3173](#) for details.

Compatibility and Usability Enhancements

- Additional separators are supported between date and time in default `TIMESTAMP` format, specifically, the multi-space separator and the 'T' separator. See [TIMESTAMP Data Type](#) for more information on `TIMESTAMP` format.
- New hint placement is supported for `INSERT` statements. See [Optimizer Hints in Impala](#) for detail.
- The `REGEX_ESCAPE()` function was implemented for escaping special characters to treat them literally in string literals.
- `SHOW CREATE VIEW` was implemented with the same functionality as `SHOW CREATE TABLE`.

- The [SHUTDOWN Statement](#) SQL command was implemented for a graceful shutdown of Impala.
- A query can contain multiple `DISTINCT` operators.
- Impala Shell can connect directly to `impalad` when configured with proxy load balancer and Kerberos. See [impala-shell Configuration Options](#) for the new flag that enables the direct connection.
- Impala can read and write data in Azure Data Lake Storage Gen2.

By default, TLS is enabled when ADLS Gen2 is accessed via HTTP and HTTPS.

Apache Kafka

The following are some of the notable new features in this release of Kafka CDH 6.1.0.

Rebase on Apache Kafka 2.0.0

The Kafka version in CDH 6.1.0 is based on Apache Kafka 2.0.0.

Apache Kafka 2.0.0 provides a number of improvements including:

- An improved replication protocol that lessens log divergence between leader and follower during fast leader failover.
- An improved and reworked controller.
- Support for more partitions per cluster. Up to 200,000 partitions in a cluster are supported.
- Incremental fetch requests, which improves replication for large partitions.
- A new configuration option for the Kafka consumer to avoid indefinite blocking.

For upstream release notes, see Apache Kafka version [1.0.2](#), [1.1.0](#), [1.1.1](#), and [2.0.0](#) release notes.

New Metrics

A high number of new metrics are introduced for Kafka. The following list is only a summary, for full list of metrics, see [Metrics Reference](#).

Broker Metrics related to the following:

- Controller State
- Global Partition Count
- Global Topic Count
- Kafka Log Cleaner
- Auto Leader Balance Rate and Time
- Controlled Shutdown Rate and Time
- Controller Change Rate and Time
- ISR Change Rate and Time
- Leader and ISR Response Received Rate and Time
- Log Dir Change Rate and Time
- Manual Leader Balance Rate and Time
- Partition Reassignment Rate and Time
- Topic Change Rate and Time
- Topic Deletion Rate and Time

Broker Topic Metrics related to the following:

- Fetch Message Conversion
- Produce Message Conversion
- Incoming Replication rate
- Outgoing Replication Rate
- Total Fetch Requests per Second
- Total Produce Requests per Second

Replica Metrics related to the following:

- Failed ISR Updates
- Offline Replica Count
- Under Min ISR Partition Count

JBOD Support

As of CDH 6.1.0, Cloudera officially supports Kafka clusters with nodes using JBOD configurations.

JBOD support introduces a new command line tool and improves an existing tool:

- A new tool, `kafka-log-dirs`, is added. The tool allows users to query partition assignment information.
- The `kafka-reassign-partitions` tool is expanded with a new functionality that allows users to reassign partitions between log directories. Users can move partitions to a different log directory on the same broker as well as to log directories on other brokers.

Security Improvements

Dependencies for third-party libraries containing security vulnerabilities are updated. Kafka in CDH 6.1.0 is shipped with third-party libraries that do not contain any known security vulnerabilities.

The properties required for enabling remote JMX authentication on Kafka brokers are available in Cloudera Manager. Users are no longer required to carry out setup through a command line interface.

Default Behavior Changes

[KAFKA-7050](#): The default value for `request.timeout.ms` is decreased to 30 seconds. In addition, a new logic is added that makes the `JoinGroup` requests ignore this timeout.

Apache Kudu

The following list describes new features in Apache Kudu for CDH 6.1.0:

- Examples showcasing functionality in C++, Java, and Python, previously hosted in a separate repository have been added. They can be found in the [examples/](#) top-level subdirectory.
- Added `kudu diagnose parse_stacks`, a tool to parse sampled stack traces out of a diagnostics log. See [KUDU-2353](#).
- Added support for `IS NULL` and `IS NOT NULL` predicates to the Kudu Python client. See [KUDU-2399](#).
- Introduced [manual data rebalancer](#) into the Kudu CLI tool. The rebalancer can be used to redistribute table replicas among tablet servers. The rebalancer can be run via `kudu cluster rebalance` sub-command. Using the new tool, it's possible to rebalance Kudu clusters of version 1.4.0 and newer.
- Added `kudu tserver get_flags` and `kudu master get_flags`, two tools that allow superusers to retrieve all the values of command line flags from remote Kudu processes. The `get_flags` tools support filtering the returned flags by tag, and by default will return only flags that were explicitly set.
- Added `kudu tablet unsafe_replace_tablet`, a tool to replace a tablet with a new one. This tool is meant to be used to recover a table when one of its tablets has permanently lost all replicas. The data in the tablet that is replaced is lost, so this tool should only be used as a last resort. See [KUDU-2290](#).

The following list describes optimizations and improvements in Apache Kudu for CDH 6.1.0:

- There is a new metric for each tablet replica tracking the number of election failures since the last successful election attempt and the time since the last heartbeat from the leader. See [KUDU-2287](#).
- Kudu now supports building and running on Ubuntu 18.04 ("Bionic Beaver"). See [KUDU-2427](#).
- Kudu now supports building and running against OpenSSL 1.1. See [KUDU-1889](#).
- Added Kerberos support to the Kudu Flume sink. See [KUDU-2012](#).
- The Kudu Spark connector now supports Spark Streaming DataFrames. See [KUDU-2539](#).
- Added `-tables` filtering argument to `kudu table list`. See [KUDU-2529](#).
- Clients now support setting a limit on the number of returned rows in scans. See [KUDU-16](#).
- Added Pandas support to the Python client. See [KUDU-1276](#).
- Enabled configuration of mutation buffer in the Python client. See [KUDU-2441](#).

- Added a `keepAlive` API call to the `KuduScanner` and `AsyncKuduScanner` in the Java client. This API can be used to keep the scanners alive on the server when processing of messages will take longer than the scanner TTL. See [KUDU-2095](#).
- The Kudu Spark integration now uses the `keepAlive` API when reading data. By default it will call `keepAlive` on a scanner with a period of 15 seconds. This will ensure that Spark jobs with large batch sizes or slow processing times do not fail with scanner not found errors. See [KUDU-2563](#).
- Number of reactor threads in the C++ client is now configurable. See [KUDU-2368](#).
- Added an optimization to avoid bottlenecks on `getpwuid_r()` in `libnss` during a Raft leader election storm. See [KUDU-2395](#).
- Improved rowset tree pruning making scans with open-ended intervals on primary key. See [KUDU-2566](#).
- The `kudu perf loadgen` tool now supports generating range-partitioned tables. The `-table_num_buckets` configuration is now removed in favor of `-table_num_hash_partitions` and `-table_num_range_partitions`. See [KUDU-1861](#).
- CFile checksum failures will now cause the affected tablet replicas to be failed and re-replicated elsewhere. See [KUDU-2469](#).
- Servers are now able to start up with data directories missing on disk. See [KUDU-2359](#).
- The `kudu perf loadgen` tool now creates tables with a period-separated database name, for example: `default.loadgen_auto_abc123`. This new behavior does not take effect if the `--table` flag is provided. The database of the table can be changed using a new `--auto_database` flag. This change is made in anticipation of an eventual Kudu/HMS integration. See [KUDU-2191](#).
- Introduced `FAILED_UNRECOVERABLE` replica health status. This is to mark replicas which are not able to catch up with the leader due to GC-collected segments of WAL and other unrecoverable cases like disk failure. With that, the replica management scheme becomes hybrid: the system evicts replicas with `FAILED_UNRECOVERABLE` health status before adding a replacement if it anticipates that it can commit the transaction, while in other cases it first adds a non-voter replica and removes the failed one only after promoting a newly-added replica to voter role.
- Two additional configuration parameters, `socketReadTimeoutMs` and `ScanRequestTimeout`, have been added to the Spark connector to allow better tuning to avoid scan timeouts under high load.
- The `kudu table` tool now supports two new options to rename tables and columns: `rename_table` and `rename_column`.
- Kudu will now wait for the clock to become synchronized at startup, controlled by the new flag `-ntp_initial_sync_wait_secs`. See [KUDU-2242](#).
- Tablet deletions are now throttled, which will help Kudu clusters remain stable even when many tablets are deleted at once. The number of tablets that a tablet server will delete at once is controlled by the new flag `-num_tablets_to_delete_simultaneously`. See [KUDU-2289](#).
- The `kudu cluster ksck` tool has been significantly enhanced. It now checks master health and consensus status, displays any unsafe or hidden flags set in the cluster, and produces a summary of the Kudu versions running on the master and tablet servers. In addition, it now supports JSON output, both in pretty-printed and compact form. The output format is controlled by the `-ksck_format` flag.

Apache Oozie

There are no notable new features in this release.

Apache Parquet

There are no notable new features in this release.

Apache Pig

There are no notable new features in this release.

Cloudera Search

In CDH 6.1 Cloudera Search is rebased on Apache Solr 7.4, which has added new features since the 7.0 version of Apache Solr used in the CDH 6.0 release.



Important: Log4j2 originally available in Apache Solr 7.4 has been excluded from CDH 6.1. Solr delivered with CDH uses Log4j 1.2.17.

Some features included in Apache Solr 7.4 are not supported in Cloudera Search in CDH 6.1. For more information, see [Cloudera Search Unsupported Features](#) on page 1042.

For detailed information on the new features added in Solr 7.4, see the [Apache Solr 7.4 Release Notes](#).

Changes in Configuration Structure

- The top-level `<highlighting>` element in `solrconfig.xml` is now officially deprecated in favor of the equivalent `<searchComponent>` syntax. This element has been out of use in default Solr installations for several releases already.
- Shard and cluster metric reporter configuration now require a class attribute.
 - If a reporter configures the `group="shard"` attribute, also configure the `class="org.apache.solr.metrics.reporters.solr.SolrShardReporter"` attribute.
 - If a reporter configures the `group="cluster"` attribute, also configure the `class="org.apache.solr.metrics.reporters.solr.SolrClusterReporter"` attribute.

See [Shard and Cluster Reporters](#) in the Apache Solr Reference Guide for more information.

Changes in Default Configuration Values

- The default value of `autoReplicaFailoverWaitAfterExpiration`, used with the `AutoAddReplicas` feature, has increased to 120 seconds from the previous default of 30 seconds. This affects how soon Solr adds new replicas to replace the replicas on nodes that have either crashed or shutdown.
- The default Solr log file size have been raised to 32MB, and the number of backups is now 10. See [Configuring Logging](#) for more information on how to change this default logging configuration.
- The `eDisMax` parser, by default, doesn't allow subqueries that specify a Solr parser using either local parameters, or the older `_query_` magic field trick.

For example, `{!prefix f=myfield v=enterp} or _query_ : "{!prefix f=myfield v=enterp}"` are not supported by default. If you want to allow power-users to do this, set `uf=* query` or some other value that includes `_query_`.

If you need full backwards compatibility for the time being, use `luceneMatchVersion=7.1.0` or an earlier version.

- In the XML query parser (`defType=xmlparser` or `{!xmlparser ... }`), the resolving of external entities is now disallowed by default.

Changes in Default Behavior

- Configuring `slowQueryThresholdMillis` now logs slow requests to a separate file named `solr_slow_requests.log`. Earlier, slow requests were logged in the `solr.log` file.
- In the leader-follower model of scaling Solr, a follower no longer commits an empty index when a completely new index is detected on the leader during replication. To resume earlier behavior, pass `false` to `skipCommitOnMasterVersionZero` in the follower section of replication handler configuration, or pass it to the `fetchindex` command.
- Collections created without specifying a configset name use a copy of the `_default` configset since Solr 7.0. Before 7.3, the copied configset was named the same as the collection name. From 7.3 onwards, it is named with a new ".AUTOCREATED" suffix to prevent overwriting custom configset names.
- The `rq` parameter used with Learning to Rank rerank query parsing no longer considers the `defType` parameter. See [Running a Rerank Query](#) for more information about this parameter.
- Replicas that are not up-to-date are no longer allowed to become leader. Use the `FORCELEADER` command of the Collections API to allow these replicas become leader.
- The behaviour of the autoscaling system now pauses all triggers from execution between the start of actions and the end of a cool down period. The triggers will resume after the cool down period expires. Earlier, the cool down

period was a fixed period that started after actions for a trigger event got completed. During this time all triggers continued to run, but any events were rejected and tried later.

- Starting a query string with local parameters `{!myparser ...}` is used to switch from one query parser to another. It is intended to be used by Solr system developers, not end users doing searches. To reduce negative side-effects of unintended hackability, Solr now limits the cases when local parameters is parsed to contexts in which the default parser is "lucene" or "func".
 - If `defType=edismax`, `q={!myparser ...}` doesn't work. In this example, put the desired query parser into the `defType` parameter.
 - If `defType=edismax`, `hl.q= {!myparser ...}` doesn't work. In this example, either put the desired query parser into the `hl.qparser` parameter or set `hl.qparser=lucene`.
- The feature to add replicas automatically if a replica goes down was earlier available only when storing indexes in HDFS. It has been ported to the autoscaling framework, and `AutoAddReplicas` is now available to all users even if their indexes are on local disks.
- Changing the `autoAddReplicas` property from disabled (`false`) to enabled (`true`) using `MODIFYCOLLECTION` API no longer replaces down replicas for the collection immediately. Instead, replicas are only added if a node containing them went down while `AutoAddReplicas` was enabled. The parameters `autoReplicaFailoverBadNodeExpiration` and `autoReplicaFailoverWorkLoopDelay` are no longer used.
- All Stream Evaluators in `solrj.io.eval` have been refactored to have a simpler and more robust structure. This simplifies and condenses the code required to implement a new Evaluator and makes it much easier for evaluators to handle different data types (primitives, objects, arrays, lists, and so forth).

Apache Sentry

The following new features have been added to Apache Sentry in CDH 6.1.0:

Fine Grained Privileges

The `CREATE` and `REFRESH` (Impala only) privileges have been introduced to allow users to create databases, tables and functions, and to execute commands that update metadata information on Impala databases and tables.

For more information about the new privileges, see [Sentry Privileges](#).

Object Ownership

Object ownership designates an owner for a database, table, or view in Sentry. The owner of an object has the equivalent of the `ALL` privilege on the object.

In CDH 6.1.0, object ownership is enabled by default with a new CDH installation. For information about enabling and using object ownership, see [Object Ownership](#).

No Group Name Case Restrictions

Sentry no longer normalizes group name characters to be lowercase. Therefore, operating system group names do not need to be treated as case insensitive. In previous versions, Sentry modified capital letters in operating system group names to be lowercase.

Apache Spark

The following list describes what's new and changed in Apache Spark for CDH 6.1.0, which is based on Apache Spark 2.4 upstream version:

- Support for [Structured Streaming](#) with some limitations. For details, check [Apache Spark Unsupported Features](#) and [Apache Spark Known Issues](#).
- Support for the Microsoft ADLS Gen2 storage service. For more information, see [Accessing Data Stored in Azure Data Lake Store \(ADLS\) through Spark](#).
- Support for Erasure Coding metrics for Hive on Spark. For more information, see [Tools Related to Erasure Coding in Hive](#) in the Hive Component Guide.

Apache Sqoop

The following new features have been added to Apache Sqoop in CDH 6.1.0:

Incremental Import NULL Column Updates into HBase

This feature implements the `--hbase-null-incremental-mode` option for the `sqoop-import` tool, which allows users to specify how NULL column updates are handled during incremental imports. For more information, see [Importing Data Into HBase Using Sqoop](#).

Automatic Compile Directory Clearing

This feature implements the `--delete-compile-dir` option for the `sqoop-import` tool, which enables users to automatically delete the generated class and jar files from the disk after the job finishes.

By default all temporary files generated by the `ClassWriter` are left behind on disk in the `/tmp/sqoop-username/compile` directory. Because the table schema can be extracted from these files, Cloudera recommends that you use the `--delete-compile-dir` option to delete these files.

Parquet Hadoop API Based Implementation for Importing Data Into Parquet Format

Support for the Hadoop API based implementation for importing data into Parquet has been added. This feature implements a new option, `--parquet-configurator-implementation`, which allows users to specify which implementation used for importing data into Parquet files. For more information, see [Importing Data into Parquet Format Using Sqoop](#).

HiveServer2 Support

This feature implements support for importing data into Hive through HiveServer2.

This feature adds three new options to the `sqoop import` tool:

- `--hs2-url`
- `--hs2-user`
- `--hs2-keytab`

The feature does not introduce any changes to the default behavior of Hive imports. When the user specifies the `--hs2-url` option, commands are sent to HiveServer2 through a JDBC connection. The data itself is not transferred via the JDBC connection. It is written directly to HDFS and moved to the Hive warehouse using the `LOAD DATA INPATH` command just like in the case of the default Hive import.

HiveServer2 provides proper Sentry authorization. As a result, Cloudera recommends importing data into Hive through HiveServer2 instead of the default method. Currently, Sqoop can authenticate to HiveServer2 using Kerberos only.

For more information, see [Importing Data into Hive with Sqoop Through HiveServer2](#).

Support for Import into Amazon S3

Sqoop now supports import from RDBMS into Amazon S3 exploiting the capabilities of the Hadoop-AWS integration. For more information about the Hadoop-AWS module, see [Hadoop-AWS module: Integration with Amazon Web Services](#).

Default Precision and Scale in Avro Import

Support to specify a default precision and scale to be used in the avro schema when a table contains numeric data in Oracle, or numeric or decimal data in Postgres, has been added. This feature implements two new properties, `sqoop.avro.logical_types.decimal.default.precision` and `sqoop.avro.logical_types.decimal.scale` to specify the default precision and scale. For more information about Importing Avro in Sqoop, see [Importing Avro Data Files in Sqoop](#).

Behavior Changes

MS SQL Connector Concerning Connection Resets

The recovery logic of the MS-SQL connector proved to be unreliable; therefore, the default behavior was changed from resilient to non-resilient. In other words, the recovery logic is now turned off by default.

The recovery logic can be turned on with the `--resilient` option.

The `--non-resilient` option, which was previously used to turn the recovery logic off, is now ignored.

The resilient operation of the MS-SQL connector requires the split-by column to contain unique values in ascending order only. Otherwise, using the `--resilient` option can lead to duplicate or missing records in the output.

Examples

Importing from a table:

```
sqoop import ... --table custom_table --split-by id -- --resilient
```

Importing via a query:

```
sqoop import ... --query "SELECT ... WHERE $CONDITIONS" --split-by ordered_column -- --resilient
```

Apache Zookeeper

The following list shows what's new and changed in Apache Zookeeper for CDH 6.1.0:

- A new metric is available to let you monitor the size of generated responses to see how to set the client's `jute.maxbuffer` property correctly. For more information, see [ZOOKEEPER-2940](#).
- A new metric is available to track the number of slow fsyncs. For more information, see [ZOOKEEPER-3019](#).
- A tool has been added to recover log and snapshot entries with CRC errors . For more information, see [ZOOKEEPER-2994](#).

Fixed Issues in CDH 6.1.0

CDH 6.1.0 fixes the following issues:

Hive Jobs Are Submitted to a Single Queue When Sentry is Deployed

Hive jobs are not submitted into the correct YARN queue when Hive is using Sentry because Hive does not use the YARN API to resolve the user or group of the job's original submitter. This causes the job to be placed in a queue using the placement rules based on the Hive user. The HiveServer2 fair scheduler queue mapping used for "non-impersonation" mode does not handle the primary-secondary queue mappings correctly.

Workaround: If you are a Hive and Sentry user, do not upgrade to CDH 6.0.0. This issue will be fixed as soon as possible. If you must use Hive and Sentry in CDH 6.0.0, see [YARN Dynamic Resource Pools Do Not Work with Hive When Sentry Is Enabled](#) for additional workarounds.

Affected Version: CDH 6.0.0

Fixed Versions: CDH 6.0.1, CDH 6.1.0 and later

Cloudera Issue: CDH-51596

Hadoop LdapGroupsMapping does not support LDAPS for self-signed LDAP server

Hadoop LdapGroupsMapping does not work with LDAP over SSL (LDAPS) if the LDAP server certificate is self-signed. This use case is currently not supported even if Hadoop User Group Mapping LDAP TLS/SSL Enabled, Hadoop User Group Mapping LDAP TLS/SSL Truststore, and Hadoop User Group Mapping LDAP TLS/SSL Truststore Password are filled properly.

Affected Versions: CDH 5.x and 6.0.x versions

Fixed Versions: CDH 6.1.0

Apache Issue: [HADOOP-12862](#)

Cloudera Issue: CDH-37926

ZooKeeper JMX did not support TLS when managed by Cloudera Manager

Technical Service Bulletin 2019-310 (TSB)

The ZooKeeper service optionally exposes a JMX port used for reporting and metrics. By default, Cloudera Manager enables this port, but prior to Cloudera Manager 6.1.0, it did not support mutual TLS authentication on this connection.

While JMX has a password-based authentication mechanism that Cloudera Manager enables by default, weaknesses have been found in the authentication mechanism, and Oracle now advises JMX connections to enable mutual TLS authentication in addition to password-based authentication. A successful attack may leak data, cause denial of service, or even allow arbitrary code execution on the Java process that exposes a JMX port. Beginning in Cloudera Manager 6.1.0, it is possible to configure mutual TLS authentication on ZooKeeper's JMX port.

Products affected: ZooKeeper

Releases affected: Cloudera Manager 6.1.0 and lower, Cloudera Manager 5.16 and lower

Users affected: All

Date/time of detection: June 7, 2018

Severity (Low/Medium/High): 9.8 High ([CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H](#))

Impact: Remote code execution

CVE: CVE-2018-11744

Immediate action required: Upgrade to Cloudera Manager 6.1.0 and enable TLS for the ZooKeeper JMX port by turning on the configuration settings "Enable TLS/SSL for ZooKeeper JMX" and "Enable TLS client authentication for JMX port" on the ZooKeeper service and configuring the appropriate TLS settings. Alternatively, disable the ZooKeeper JMX port via the configuration setting "Enable JMX Agent" on the ZooKeeper service.



Note: Disabling the ZooKeeper JMX port prevents Cloudera Manager from performing health checks on the ZooKeeper service.

Addressed in release/refresh/patch: Cloudera Manager 6.1.0

Spark Streaming jobs loop if missing Kafka topic

Spark jobs can loop endlessly if the Kafka topic is deleted while a Kafka streaming job (which uses KafkaSource) is in progress.

Cloudera Issue: CDH-57903, CDH-64513

Long-running Spark applications on a secure cluster might fail if driver is restarted

If you submit a long-running app on a secure cluster using the `--principal` and `--keytab` options in cluster mode, and a failure causes the driver to restart after 7 days (the default maximum HDFS delegation token lifetime), the new driver fails with an error similar to the following:

```
Exception in thread "main"  
org.apache.hadoop.ipc.RemoteException(org.apache.hadoop.security.token.SecretManager$InvalidToken):  
token <token_info> can't be found in cache
```

Apache Issue: [SPARK-23361](#)

Cloudera Issue: CDH-64865

Kafka May Be Stuck with Under-replicated Partitions after ZooKeeper Session Expires

This problem can occur when your Kafka cluster includes a large number of under-replicated Kafka partitions. One or more broker logs include messages such as the following:

```
[2016-01-17 03:36:00,888] INFO Partition [__samza_checkpoint_event-creation_1,3] on  
broker 3: Shrinking ISR for partition [__samza_checkpoint_event-creation_1,3] from 6,5  
to 5 (kafka.cluster.Partition)  
[2016-01-17 03:36:00,891] INFO Partition [__samza_checkpoint_event-creation_1,3] on  
broker 3: Cached zkVersion [66] not equal to that in zookeeper, skip updating ISR  
(kafka.cluster.Partition)
```

There will also be an indication of the ZooKeeper session expiring in one or more Kafka broker logs around the same time as the previous errors:

```
INFO zookeeper state changed (Expired) (org.I0Itec.zkclient.ZkClient)
```

The log is typically in `/var/log/kafka` on each host where a Kafka broker is running. The location is set by the property `kafka.log4j.dir` in Cloudera Manager. The log name is `kafka-broker-hostname.log`. In diagnostic bundles, the log is under `logs/hostname-ip-address/`.

Workaround: To move forward after seeing this problem, restart the affected Kafka brokers. You can restart individual brokers from the **Instances** tab in the Kafka service page in Cloudera Manager.



Note: If restarting the brokers does not resolve the problem, you might not have this issue; see [KAFKA-3083 A soft failure in controller may leave a topic partition in an inconsistent state](#). This problem also involves the ZooKeeper session expiring, but will not involve the error message with `Cached zkVersion [XX] not equal to that in zookeeper`.



Note:

To reduce the chances of this issue happening again, do what you can to make sure ZooKeeper sessions do not expire:

- Reduce the potential for long garbage collection pauses by brokers:
 - Use a better garbage collection mechanism in the JVM, such as G1GC. You can do this by adding `-XX:+UseG1GC` in the `broker_java_opts`.
 - Increase broker heap size if it is too small (`broker_max_heap_size`). Be careful that you don't choose a heap size that can cause out-of-memory problems given all the services running on the node.
- Increase the ZooKeeper session timeout configuration on brokers (`zookeeper.session.timeout.ms`), to reduce the likelihood that sessions expire.
- Ensure ZooKeeper itself is well resourced and not overwhelmed so it can respond. For example, it is highly recommended to locate the ZooKeeper log directory on its own disk.

Affected Versions: CDK 1.4.x, 2.0.x, 2.1.x, 2.2.x

Fixed Versions:

- **Full Fix:** CDH 6.1.0
- **Partial Fix:** CDH 6.0.0, Kafka implementations with CDH 6.0.0 are less likely to encounter this issue.

Apache Issue: [KAFKA-2729](#)

Cloudera Issue: CDH-42514

Upstream Issues Fixed

The following upstream issues are fixed in CDH 6.1.0:

Apache Accumulo

There are no notable fixed issues in this release.

Apache Avro

There are no notable fixed issues in this release.

Apache Crunch

There are no notable fixed issues in this release.

Apache Flume

The following issues are fixed in CDH 6.1.0:

- [FLUME-2442](#) - Need an alternative to providing clear text passwords in flume config
- [FLUME-2973](#) - Deadlock in hdfs sink
- [FLUME-2977](#) - Upgrade RAT to 0.12
- [FLUME-3050](#) - add counters for error conditions and expose to monitor URL
- [FLUME-3182](#) - add support for SSL/TLS for syslog (tcp) sources
- [FLUME-3222](#) - Fix for NoSuchFileException thrown when files are being deleted
- [FLUME-3223](#) - Flume HDFS Sink should retry close prior recover lease
- [FLUME-3227](#) - Add Rate Limiter to stresssource
- [FLUME-3239](#) - Do not rename files in SpoolDirectorySource
- [FLUME-3246](#) - Validate flume configuration to prevent larger source batchsize than
- [FLUME-3269](#) - Support JSSE keystore/trustore -D system properties
- [FLUME-3278](#) - Handling -D keystore parameters in Kafka components

Apache Hadoop HDFS

The following issues are fixed in CDH 6.1.0:

- [HADOOP-9214](#) - Enhance the hadoop fs touchz command so that it can now modify atime and mtime.
- [HADOOP-12502](#) - Fixed an issue where setting the replication of a HDFS folder recursively can run out of memory.
- [HADOOP-13649](#) - s3guard: Implement time-based (TTL) expiry for LocalMetadataStore.
- [HADOOP-13761](#) - S3Guard: Implement retries for DDB failures and throttling; translate exceptions.
- [HADOOP-14212](#) - Expose SecurityEnabled boolean field in JMX for other services besides NameNode.
- [HADOOP-14507](#) - Extend per-bucket secret key config with explicit getPassword() on fs.s3a.\$bucket.secret.key.
- [HADOOP-14758](#) - Improve S3GuardTool.prune to handle UnsupportedOperationException.
- [HADOOP-14759](#) - Improve S3GuardTool.prune to prune specific bucket entries.
- [HADOOP-14913](#) - Implement sticky bit for rename() operation in Azure WASB.
- [HADOOP-14935](#) - Fix an issue where Azure POSIX permissions are taking effect in access() method even when authorization is enabled.
- [HADOOP-14965](#) - Change the S3a input stream "normal" fadvise mode to be adaptive.
- [HADOOP-15054](#) - Upgrade hadoop dependency on commons-codec to 1.11.
- [HADOOP-15086](#) - Fix an issue where the NativeAzureFileSystem file rename is not atomic.
- [HADOOP-15121](#) - Fix a NullPointerException when using DecayRpcScheduler.
- [HADOOP-15141](#) - Support IAM Assumed roles in S3A.
- [HADOOP-15143](#) - Fix an NPE due to Invalid KerberosTicket in UGI.
- [HADOOP-15151](#) - Fix an issue where the MapFile.fix creates a wrong index file in case of block-compressed data file.
- [HADOOP-15176](#) - Enhance IAM Assumed Role support in S3A client.
- [HADOOP-15206](#) - Fix an issue where BZip2 drops and duplicates records when input split size is small.
- [HADOOP-15209](#) - Enhance DistCp to eliminate needless deletion of files under already deleted directories.
- [HADOOP-15212](#) - Add independent secret manager method for logging expired tokens.
- [HADOOP-15215](#) - Enhance s3guard set-capacity command to fail on read/write of 0.
- [HADOOP-15217](#) - Enhance FsURLConnection to handle paths with spaces.
- [HADOOP-15250](#) - Fix an issue where a multiHomed server network cluster Network IPC Client binds the wrong address.
- [HADOOP-15267](#) - S3A multipart upload fails when SSE-C encryption is enabled.
- [HADOOP-15391](#) - Add missing CSS file in hadoop-aws, hadoop-aliyun, hadoop-azure and hadoop-azure-datalake modules.
- [HADOOP-15423](#) - Merge fileCache and dirCache into one single cache in LocalMetadataStore
- [HADOOP-15441](#) - Log kms url and token service at debug level.
- [HADOOP-15446](#) - WASB: PageBlobInputStream.skip breaks HBASE replication.

- [HADOOP-15449](#) - Increase default timeout of ZK session to avoid frequent NameNode failover.
- [HADOOP-15469](#) - Fix an issue where the S3A directory committer commit job fails if `_temporary` directory created under destination.
- [HADOOP-15478](#) - Fix an issue with WASB that caused an `hflush()` and `hsync()` regression.
- [HADOOP-15541](#) - Fix an issue where the AWS SDK can mistake stream timeouts for EOF and throw `SdkClientExceptions`.
- [HADOOP-15598](#) - Fix an issue where the `DataChecksum` calculate checksum experiences contention on hashtable synchronization.
- [HADOOP-15612](#) - Improve exception when `tfile` fails to load `LzoCodec`.
- [HADOOP-15633](#) - Fix an issue where `fs.TrashPolicyDefault` cannot create trash directory.
- [HADOOP-15679](#) - Enhance `ShutdownHookManager` shutdown time to be configurable & extended.
- [HADOOP-15684](#) - Fix an issue where `triggerActiveLogRoll` stuck on dead NameNode when `ConnectTimeoutException` happens.
- [HADOOP-15719](#) - Fail-fast when using OAuth over http.
- [HADOOP-15850](#) - Enhance `CopyCommitter#concatFileChunks` to check that the blocks per chunk is not 0.
- [HADOOP-15861](#) - Move `DelegationTokenIssuer` to the correct path.
- [HDFS-9049](#) - Make Datanode Netty reverse proxy port configurable.
- [HDFS-10183](#) - Prevent race condition during class initialization.
- [HDFS-11701](#) - Fix an issue where NPE from `Unresolved Host` causes permanent `DFSInputStream` failures.
- [HDFS-11719](#) - Enhance `Arrays.fill()` wrong index in `BlockSender.readChecksum()` exception handling.
- [HDFS-11900](#) - Fix an issue where hedged reads thread pool creation not synchronized.
- [HDFS-12070](#) - Fix an issue where failed block recovery leaves files open indefinitely and at risk for data loss.
- [HDFS-12574](#) - Add `CryptoInputStream` to `WebHdfsFileSystem` read call.
- [HDFS-12907](#) - Allow read-only access to reserved raw for non-superusers.
- [HDFS-12978](#) - Add fine-grained locking while consuming journal stream.
- [HDFS-13027](#) - Handle possible NPEs due to deleted blocks in race condition.
- [HDFS-13048](#) - Fix an issue where the `LowRedundancyReplicatedBlocks` metric can be negative.
- [HDFS-13052](#) - Add support for snapshot diff with `WebHDFS`.
- [HDFS-13060](#) - Add a `BlacklistBasedTrustedChannelResolver` for `TrustedChannelResolver`.
- [HDFS-13081](#) - Allow SASL and privileged HTTP with `Datanode#checkSecureConfig`.
- [HDFS-13087](#) - Make snapshotted encryption zone information immutable.
- [HDFS-13145](#) - Fix an issue where an SBN crash occurs when transitioning to ANN with in-progress edit tailing enabled.
- [HDFS-13225](#) - Fix an issue where `StripeReader#checkMissingBlocks()` 's `IOException` info is incomplete.
- [HDFS-13280](#) - Fix NPE in `get snapshottable` directory list call.
- [HDFS-13330](#) - Fix an issue where `ShortCircuitCache#fetchOrCreate` never retries.
- [HDFS-13448](#) - Ignore locality for First Block Replica.
- [HDFS-13493](#) - Reduce the `HttpServer2` thread count on `DataNodes`.
- [HDFS-13641](#) - Add metrics for edit log tailing.
- [HDFS-13658](#) - Expose `HighestPriorityLowRedundancy` blocks statistics.
- [HDFS-13668](#) - `FSPermissionChecker` may throw `rarrayIndexOutOfBoundsException` when checking inode permission.
- [HDFS-13686](#) - Add overall metrics for `FSNamesystemLock`.
- [HDFS-13728](#) - Fix an issue where the Disk Balancer fails if volume usage is greater than capacity.
- [HDFS-13731](#) - Fix an issue where `ReencryptionUpdater` fails with `ConcurrentModificationException` during `processCheckpoints`.
- [HDFS-13738](#) - Fix an issue where `fsck -list-corruptfileblocks` encounters an infinite loop if the user is not privileged.
- [HDFS-13758](#) - Enhance `DatanodeManager` to throw exception if it has `BlockRecoveryCommand` but the block is not under construction.
- [HDFS-13820](#) - Add an ability to disable `CacheReplicationMonitor`.

- [HDFS-13830](#) - Add support for getting snaphottable directory list.
- [HDFS-13831](#) - Make block increment deletion number configurable.
- [HDFS-13833](#) - Improve BlockPlacementPolicyDefault's consider load logic.
- [HDFS-13838](#) - Fix an issue where WebHdfsFileSystem.getFileStatus() does not return correct "snapshot enabled" status.
- [HDFS-13846](#) - Fix an issue where safe blocks counter is not decremented correctly if the block is striped.
- [HDFS-13868](#) - Fix an NPE with the GETSNAPSHOTDIFF API when the parameter "snapshotname" is given but "oldsnapshotname" is not.
- [HDFS-13876](#) - Implement ALLOWSNAPSHOT/DISALLOWSNAPSHOT for HttpFS.
- [HDFS-13877](#) - Implement GETSNAPSHOTDIFF for HttpFS.
- [HDFS-13878](#) - Implement GETSNAPSHOTTABLEDIRECTORYLIST for HttpFS.
- [HDFS-13882](#) - Set a maximum delay for retrying locateFollowingBlock.
- [HDFS-13885](#) - Add debug logs in dfsclient around decrypting EDEK.
- [HDFS-13886](#) - Fix an issue where HttpFSFileSystem.getFileStatus() doesn't return "snapshot enabled" bit.
- [HDFS-14009](#) - Fix an issue where FileStatus#setSnapShotEnabledFlag throws InvocationTargetException when attribute set is emptySet.

MapReduce 2

The following issues are fixed in CDH 6.1.0:

- [MAPREDUCE-6861](#) - Add metrics tags for ShuffleClientMetrics.
- [MAPREDUCE-7150](#) - Optimize collections used by MR JHS to reduce its memory.

YARN

The following issues are fixed in CDH 6.1.0:

- [YARN-7159](#) - Normalize unit of resource objects in ResourceManager to avoid unit conversion in critical path.
- [YARN-7237](#) - Cleanup usages of ResourceProfiles.
- [YARN-7728](#) - Expose container preemptions related information in Capacity Scheduler queue metrics.
- [YARN-7738](#) - CapacityScheduler: Support refresh maximum allocation for multiple resource types .
- [YARN-7948](#) - Enable fair scheduler to refresh maximum allocation for multiple resource types.
- [YARN-8338](#) - Fixed an issue where TimelineService V1.5 does not come up after HADOOP-15406.
- [YARN-8566](#) - Add diagnostic message for unschedulable containers .
- [YARN-8842](#) - Expose metrics for custom resource types in QueueMetrics.
- [YARN-8990](#) - Fix fair scheduler race condition in app submit and queue cleanup.

Apache HBase

The following issues are fixed in CDH 6.1.0:

- [HBASE-18451](#) - PeriodicMemstoreFlusher should inspect the queue before adding a delayed flush request, fix logging
- [HBASE-18549](#) - Add metrics for failed replication queue recovery
- [HBASE-19418](#) - configurable range of delay in PeriodicMemstoreFlusher
- [HBASE-20193](#) - Basic Replication Web UI - Regionserver
- [HBASE-20375](#) - Remove use of getCurrentUserCredentials in hbase-spark module
- [HBASE-20469](#) - Directory used for sidelining old recovered edits files should be made configurable
- [HBASE-20732](#) - Shutdown scan pool when master is stopped
- [HBASE-20734](#) - Colocate recovered edits directory with hbase.wal.dir
- [HBASE-20741](#) - Split of a region with replicas creates all daughter regions
- [HBASE-20792](#) - info:servername and info:sn inconsistent for OPEN region
- [HBASE-20808](#) - (Addendum) Remove duplicate calls for cancelling of chores
- [HBASE-20846](#) - Restore procedure locks when master restarts
- [HBASE-20857](#) - balancer status tag in jmx metrics

- [HBASE-20865](#) - CreateTableProcedure is stuck in retry loop in CREATE_TABLE_WRITE_FS_LAYOUT state
- [HBASE-20892](#) - [UI] Start / End keys are empty on table.jsp
- [HBASE-20942](#) - Revert "Fix Array Index Out Of Bounds Exception for RpcServer TRACE logging"
- [HBASE-20965](#) - Separate region server report requests to new handlers
- [HBASE-20985](#) - add two attributes when we do normalization
- [HBASE-20986](#) - Separate the config of block size when we do log splitting and write Hlog
- [HBASE-21001](#) - ReplicationObserver fails to load in HBase 2.0.0
- [HBASE-21023](#) - Added bypassProcedure() API to HbckService
- [HBASE-21032](#) - ScanResponses contain only one cell each
- [HBASE-21055](#) - NullPointerException when balanceOverall() but server balance info is null
- [HBASE-21072](#) - Addendum do not write lock file when running TestHBaseFscckReplication
- [HBASE-21073](#) - Redo concept of maintenance mode
- [HBASE-21095](#) - The timeout retry logic for several procedures are broken after master restarts
- [HBASE-21125](#) - 'HBASE-20942 Improve RpcServer TRACE logging' to branch-2.1
- [HBASE-21126](#) - "Add ability for HBase Canary to ignore a configurable number of ZooKeeper down nodes" to branch-2.1
- [HBASE-21127](#) - TableRecordReader need to handle cursor result too
- [HBASE-21132](#) - return wrong result in rest multiget
- [HBASE-21144](#) - AssignmentManager.waitForAssignment is not stable
- [HBASE-21155](#) - Save on a few log strings and some churn in wal splitter by skipping out early if no logs in dir
- [HBASE-21156](#) - [hbck2] Queue an assign of hbase:meta and bulk assign/unassign
- [HBASE-21158](#) - Empty qualifier cell is always returned when using QualifierFilter
- [HBASE-21164](#) - reportForDuty should do backoff rather than retry
- [HBASE-21171](#) - [amv2] Tool to parse a directory of MasterProcWALs standalone
- [HBASE-21172](#) - Reimplement the retry backoff logic for ReopenTableRegionsProcedure
- [HBASE-21174](#) - [REST] Failed to parse empty qualifier in TableResource#getScanResource
- [HBASE-21179](#) - Fix the number of actions in responseTooSlow log
- [HBASE-21181](#) - Use the same filesystem for wal archive directory and wal directory
- [HBASE-21182](#) - Failed to execute start-hbase.sh
- [HBASE-21185](#) - WALPrettyPrinter: Additional useful info to be printed by wal printer tool, for debugability purposes
- [HBASE-21190](#) - Log files and count of entries in each as we load from the MasterProcWAL store
- [HBASE-21191](#) - Add a holding-pattern if no assign for meta or namespace (Can happen if masterprocwals have been cleared).
- [HBASE-21196](#) - HTableMultiplexer clears the meta cache after every put operation
- [HBASE-21200](#) - Memstore flush doesn't finish because of seekToPreviousRow() in memstore scanner.
- [HBASE-21204](#) - NPE when scan raw DELETE_FAMILY_VERSION and codec is not set
- [HBASE-21206](#) - Scan with batch size may return incomplete cells
- [HBASE-21207](#) - Add client side sorting functionality in master web UI for table and region server details
- [HBASE-21208](#) - Bytes#toShort doesn't work without unsafe
- [HBASE-21212](#) - Wrong flush time when update flush metric
- [HBASE-21214](#) - [hbck2] setTableState just sets hbase:meta state, not in-memory state
- [HBASE-21223](#) - [amv2] Remove abort_procedure from shell
- [HBASE-21228](#) - Memory leak since AbstractFSWAL caches Thread object and never clean later
- [HBASE-21232](#) - Show table state in Tables view on Master home page
- [HBASE-21233](#) - Allow the procedure implementation to skip persistence of the state after a execution
- [HBASE-21242](#) - Revert "[amv2] Miscellaneous minor log and assign procedure create improvements; ADDENDUM Fix TestHRegionInfo"
- [HBASE-21248](#) - Implement exponential backoff when retrying for ModifyPeerProcedure
- [HBASE-21249](#) - Add jitter for ProcedureUtil.getBackoffTimeMs
- [HBASE-21250](#) - Addendum remove unused modification in hbase-server module

- [HBASE-21250](#) - Refactor WALProcedureStore and add more comments for better understanding the implementation
- [HBASE-21254](#) - Need to find a way to limit the number of proc wal files
- [HBASE-21259](#) - [amv2] Revived deadservers; recreated serverstatenode
- [HBASE-21260](#) - The whole balancer plans might be aborted if there are more than one plans to move a same region
- [HBASE-21263](#) - Mention compression algorithm along with other storefile details
- [HBASE-21266](#) - Not running balancer because processing dead regionservers, but empty dead rs list
- [HBASE-21280](#) - Add anchors for each heading in UI
- [HBASE-21287](#) - Allow configuring test master initialization wait time.
- [HBASE-21288](#) - HostingServer in UnassignProcedure is not accurate
- [HBASE-21292](#) - IdLock.getLockEntry() may hang if interrupted
- [HBASE-21299](#) - List counts of actual region states in master UI tables section
- [HBASE-21303](#) - [shell] clear_deadservers with no args fails
- [HBASE-21323](#) - Revert "Should not skip force updating for a sub procedure even if"
- [HBASE-21425](#) - 2.1.1 fails to start over 1.x data; namespace not assigned

Apache Hive

The following issues are fixed in CDH 6.1.0:

Code Changes Might Be Required

The following fixes might require code changes for the CDH 6.1.0 release of Apache Hive:

- [HIVE-14388](#) - Add number of rows inserted message after insert command in Beeline
- [HIVE-17799](#) - Add Ellipsis For Truncated Query In Hive Lock
- [HIVE-19344](#) - Change default value of msck.repair.batch.size

Code Changes Should Not Be Required

The following fixes should not require code changes, but they contain improvements that might enhance your deployment:

- [HIVE-6980](#) - Drop table by using direct SQL
- [HIVE-10296](#) - Cast exception observed when hive runs a multi-join query on metastore (postgres), since postgres pushes the filter into the join, and ignores the condition before applying cast
- [HIVE-13900](#) - HiveStatement.executeAsync() may not work properly when hive.server2.async.exec.async.compile is turned on
- [HIVE-14162](#) - Allow disabling of a long-running job on Hive On Spark On YARN
- [HIVE-14560](#) - Support exchange partition between s3 and HDFS tables
- [HIVE-14690](#) - Query fail when hive.exec.parallel=true, with conflicting session dir
- [HIVE-14984](#) - Hive-WebUI access results in Request is a replay (34) attack
- [HIVE-15104](#) - Hive on Spark generate more shuffle data than hive on mr
- [HIVE-15180](#) - Extend JSONMessageFactory to store additional information about metadata objects on different table events
- [HIVE-15250](#) - Reuse partitions info generated in MoveTask to its subscribers (StatsTask)
- [HIVE-15712](#) - New HiveConf in SQLOperation.getSerDe() impacts CPU on Hiveserver2
- [HIVE-15995](#) - Syncing metastore table with serde schema
- [HIVE-16071](#) - HoS RPCServer misuses the timeout in its RPC handshake
- [HIVE-16143](#) - Improve msck repair batching
- [HIVE-16172](#) - Switch to a fairness lock to synchronize HS2 thrift client
- [HIVE-16219](#) - Metastore notification_log contains serialized message with non-functional fields
- [HIVE-16285](#) - Servlet for dynamically configuring log levels
- [HIVE-16346](#) - inheritPerms should be conditional based on the target filesystem
- [HIVE-16348](#) - HoS query is canceled but error message shows RPC is closed
- [HIVE-16431](#) - Support Parquet StatsNoJobTask for Spark & Tez engine

- [HIVE-16607](#) - ColumnStatsAutoGatherContext regenerates HiveConf.HIVEQUERYID
- [HIVE-16664](#) - Add join related Hive blobstore tests
- [HIVE-16736](#) - General Improvements to BufferedRows
- [HIVE-17300](#) - WebUI query plan graphs
- [HIVE-17401](#) - Hive session idle timeout doesn't function properly
- [HIVE-17747](#) - HMS DropTableMessage should include the full table object
- [HIVE-18031](#) - Support replication for Alter Database operation
- [HIVE-18118](#) - Explain Extended should indicate if a file being read is an EC file
- [HIVE-18652](#) - Print Spark metrics on console
- [HIVE-18690](#) - Integrate with Spark OutputMetrics
- [HIVE-18696](#) - The partition folders might not get cleaned up properly in the HiveMetaStore.add_partitions_core method if an exception occurs
- [HIVE-18705](#) - Improve HiveMetaStoreClient.dropDatabase
- [HIVE-18743](#) - CREATE TABLE on S3 data can be extremely slow.DO_NOT_UPDATE_STATS workaround is buggy
- [HIVE-18766](#) - Race condition during shutdown of RemoteDriver, error messages aren't always sent
- [HIVE-18778](#) - Needs to capture input/output entities in explain
- [HIVE-18906](#) - Lower Logging for "Using direct SQL".
- [HIVE-18916](#) - SparkClientImpl doesn't error out if spark-submit fails.
- [HIVE-19008](#) - Improve Spark session id logging
- [HIVE-19053](#) - RemoteSparkJobStatus#getSparkJobInfo treats all exceptions as timeout errors
- [HIVE-19079](#) - Add extended query string to Spark job description
- [HIVE-19370](#) - Issue: ADD Months function on timestamp datatype fields in Hive
- [HIVE-19371](#) - Add table ownerType to HMS thrift API
- [HIVE-19372](#) - Add table ownerType to JDO/SQL and ObjectStore
- [HIVE-19374](#) - Parse and process ALTER TABLE SET OWNER command syntax
- [HIVE-19477](#) - Hiveserver2 in HTTP mode not emitting metric default.General.open_connections
- [HIVE-19486](#) - Discrepancy in HikariCP config naming
- [HIVE-19508](#) - SparkJobMonitor getReport doesn't print stage progress in order
- [HIVE-19525](#) - Spark task logs print PLAN PATH excessive number of times
- [HIVE-19559](#) - SparkClientImpl shouldn't name redirector thread RemoteDriver
- [HIVE-19718](#) - Adding partitions in bulk also fetches table for each partition
- [HIVE-19733](#) - RemoteSparkJobStatus#getSparkStageProgress inefficient implementation
- [HIVE-19766](#) - Show the number of rows inserted when execution engine is Spark
- [HIVE-19783](#) - Retrieve only locations in HiveMetaStore.dropPartitionsAndGetLocations
- [HIVE-19786](#) - RpcServer cancelTask log message is incorrect
- [HIVE-19787](#) - Log message when spark-submit has completed
- [HIVE-19814](#) - RPC Server port is always random for spark
- [HIVE-19899](#) - Support stored as JsonFile
- [HIVE-19937](#) - Intern fields in MapWork on deserialization
- [HIVE-19942](#) - Hive Notification: All events for indexes should have table name
- [HIVE-19986](#) - Add logging of runtime statistics indicating when Hdfs Erasure Coding is used by MR
- [HIVE-20032](#) - Don't serialize hashCode for repartitionAndSortWithinPartitions
- [HIVE-20056](#) - SparkPartitionPruner shouldn't be triggered by Spark tasks
- [HIVE-20098](#) - Statistics: NPE when getting Date column partition statistics
- [HIVE-20212](#) - Hiveserver2 in http mode emitting metric default.General.open_connections incorrectly
- [HIVE-20374](#) - Write Hive version information to Parquet footer
- [HIVE-20466](#) - Improve org.apache.hadoop.hive.ql.exec.FunctionTask Experience
- [HIVE-20505](#) - upgrade org.openjdk.jmh:jmh-core to 1.21
- [HIVE-20544](#) - TOpenSessionReq logs password and username
- [HIVE-20545](#) - Exclude parameters that can have potentially large size from HMS notification message JSON

- [HIVE-20601](#) - EnvironmentContext null in ALTER_PARTITION event in DbNotificationListener
- [HIVE-20603](#) - "Wrong FS" error when inserting to partition after changing table location filesystem
- [HIVE-20678](#) - HiveHBaseTableOutputFormat should implement HiveOutputFormat to ensure compatibility
- [HIVE-20695](#) - HoS Query fails with hive.exec.parallel=true.
- [HIVE-20711](#) - Race Condition when Multi-Threading in SessionState.createRootHDFSDir
- [HIVE-20742](#) - SparkSessionManagerImpl maintenance thread only cleans up session once

Hue

The following issues are fixed in CDH 6.1.0:

- [HUE-7407](#) - [useradmin] Added superuser group priv to useradmin
- [HUE-7698](#) - [oozie] Added warning when there is a space in the shell action
- [HUE-7698](#) - [oozie] Files of a Shell document action in a workflow are not being generated in the XML
- [HUE-7860](#) - [core] Update greenlet from 0.4.12 to 0.4.15
- [HUE-7860](#) - [core] Add monotonic 1.5
- [HUE-7860](#) - [core] Update Gunicorn from 19.7.1 to 19.9.0
- [HUE-7860](#) - [core] Update eventlet from 0.21.0 to 0.24.1
- [HUE-7860](#) - [core] Add dnspython 1.15.0
- [HUE-8139](#) - [core] Fix django-debug-toolbar 1.9.1 to work with django_debug_panel
- [HUE-8140](#) - [editor] Automatically continue execution after DDL statements in batch mode
- [HUE-8330](#) - [cluster] Keep only external cluster configs in [[clusters]]
- [HUE-8330](#) - [core] API should not check for remote cloud clusters if they are not configured
- [HUE-8339](#) - [impala] Fix typo in smart pooling ini configuration
- [HUE-8391](#) - [importer] Improve Create table from File UX when loading data from parent directory not readable by hive/impala
- [HUE-8488](#) - [fb] Disable drag&drop when show_upload_button=false
- [HUE-8507](#) - [editor] Add types to sqlalchemy results.
- [HUE-8507](#) - [editor] SQL alchemy result set column headers are missing.
- [HUE-8509](#) - [oozie] Schedule repetitive remote jobs
- [HUE-8509](#) - [oozie] Support sending a SQL query to a remote cluster
- [HUE-8509](#) - [jb] Clean-up of the listing of remote jobs
- [HUE-8509](#) - [oozie] Properly set the capture output flag of shell document action
- [HUE-8509](#) - [oozie] Remote job action
- [HUE-8509](#) - [kafka] Do not break left panel
- [HUE-8514](#) - [core] Log metrics when calling is_alive
- [HUE-8516](#) - [cluster] List more namespaces and filter out invalide ones
- [HUE-8518](#) - [editor] Fix sample Kudu
- [HUE-8519](#) - [jb] Impala API can now directly return json
- [HUE-8521](#) - [auth] Protect against empty LDAP login username
- [HUE-8522](#) - [jb] Make paused tasks more obvious. Add queued state to Impala
- [HUE-8523](#) - [jb] Display Impala backends & instances
- [HUE-8524](#) - [impala] Provide the root cause of INVALIDATE METADATA failures
- [HUE-8527](#) - [editor] Fix concatenation type exception in namespace call
- [HUE-8528](#) - [frontend] Temporarily disable namespace caching
- [HUE-8529](#) - [frontend] Create a context selector component
- [HUE-8531](#) - [sqoop] Properly name the table import job
- [HUE-8532](#) - [core] Fix database migration test.
- [HUE-8533](#) - [importer] Properly displayed failed import progress bar as red and not orange
- [HUE-8534](#) - [jb] Django url name does not exist and breaks page
- [HUE-8535](#) - [sqoop] Use the proper engine name and not the connection nice name as jdbc prefix
- [HUE-8536](#) - [sqoop] Include hive-site.xml automatically when importing data to hive

- [HUE-8537](#) - [sqoop] List the proper column type when importing to a hive table
- [HUE-8538](#) - [sqoop] Allow table preview from manual input not JDBC
- [HUE-8538](#) - [importer] Automatically fill-up the db driver list when selecting sqoop
- [HUE-8539](#) - [importer] Clean-up configuration and turn sqoop and solr imports to on by default
- [HUE-8540](#) - [sqoop] Add ability to set default jdbc driver path for any sqoop job
- [HUE-8541](#) - [oozie] Workflow rerun does not restart polling for job status
- [HUE-8542](#) - [frontend] Add a custom left nav for multi cluster mode
- [HUE-8542](#) - [frontend] Polish cloud cluster and require multi cluster mode to be on
- [HUE-8544](#) - [importer] Support sending file data into a kafka topic
- [HUE-8545](#) - [search] Fix filtering in the index selection dropdown
- [HUE-8546](#) - [assist] Limit assist refresh to the active namespace for DDL statement executions
- [HUE-8546](#) - [assist] Make sure the assist gets refreshed after multiple DDL statement executions
- [HUE-8547](#) - [jb] Fix navigation from create schedule to view schedule.
- [HUE-8547](#) - [jb] Fix refresh on coordinator page.
- [HUE-8548](#) - [jb] Fix invalid date in workflow task
- [HUE-8549](#) - [autocomplete] Improve CTE alias suggestions when there's a trailing ";"
- [HUE-8550](#) - [jb] Use the context selector component in the job browser
- [HUE-8550](#) - [frontend] Make last selected compute and namespace sticky
- [HUE-8550](#) - [jb] Default to the last selected type of compute in the job browser
- [HUE-8550](#) - [jb] Refresh job browser tabs on compute selection
- [HUE-8551](#) - [importer] Support setting basic Flume configs
- [HUE-8553](#) - [kafka] Link create topic API to the UI
- [HUE-8553](#) - [kafka] Add a workaround API for creating a topic
- [HUE-8554](#) - [indexer] Protect against empty sample data that can be null
- [HUE-8554](#) - [importer] Support latest Spark version 2 natively
- [HUE-8554](#) - [manager] Adding a check if service is installed API
- [HUE-8554](#) - [cluster] Create data warehouse cluster skeleton
- [HUE-8554](#) - [core] Support dist Spark installed when running envelope via shell
- [HUE-8554](#) - [cluster] Avoid double escapating of data warehouse results
- [HUE-8554](#) - [cluster] Rename analytic cluster API command to dataware
- [HUE-8555](#) - [cluster] Do not submit remote coordinator jobs by default
- [HUE-8555](#) - [jb] Refactor job browser preview to support multi cluster
- [HUE-8555](#) - [jb] Support killing data warehouse cluster
- [HUE-8555](#) - [jb] Sort clusters with the most recents first
- [HUE-8555](#) - [jb] List data warehouse clusters
- [HUE-8555](#) - [jb] Auto select the first cluster if possible at init
- [HUE-8556](#) - [fb] Overuse of trash folder checking
- [HUE-8557](#) - [sqoop] DB name and table names variables were already present
- [HUE-8557](#) - [sqoop] Offer to rename the table or selected a different existing Hive database
- [HUE-8558](#) - [jb] Add tracking URL to Spark Jobs and remove url and killUrl
- [HUE-8559](#) - [jb] Hue shows incorrect color for failed oozie jobs
- [HUE-8560](#) - [tb] Make sure the default DB is opened by default in the Table Browser
- [HUE-8560](#) - [tb] Stick to the same view when switching namespaces in the Table Browser
- [HUE-8561](#) - [editor] Don't show databases for spark editor
- [HUE-8562](#) - [frontend] Make sure the context popover is shown above the jobs panel
- [HUE-8564](#) - [useradmin] Fix last activity update for notebook/api/check_status
- [HUE-8564](#) - [useradmin] Fix last activity update for jobbrowser/api/jobs requests
- [HUE-8565](#) - [fb] Parent directory should not be selectable
- [HUE-8565](#) - [fb] Current directory should not be deletable.
- [HUE-8566](#) - [useradmin] Update message for duplicate user creation.

- [HUE-8567](#) - [jb] Fix id max length in mini jb
- [HUE-8568](#) - [jb] Prevent mini jb actions from taking content width
- [HUE-8568](#) - [jb] Activate smart file links from the logs by also checking for prefixes
- [HUE-8570](#) - [assist] Extract a separate column sample component
- [HUE-8570](#) - [frontend] Right align the Hue dropdown when rendered outside the window
- [HUE-8570](#) - [assist] Add distinct as an option for column samples in the context popover
- [HUE-8570](#) - [editor] Enable click to insert from sample popover to SQL variables
- [HUE-8570](#) - [assist] Add inline autocomplete for column samples
- [HUE-8570](#) - [editor] Enable optional operation on the sample API endpoints
- [HUE-8570](#) - [assist] Limit context popover sample operations to Impala and Hive
- [HUE-8570](#) - [assist] Add min and max to column sample popover
- [HUE-8571](#) - [sentry] navigator_api ERROR for PRIVILEGE_HIERARCHY[hierarchy[server][SENTRY_PRIVILEGE_KEY]['action']]
- [HUE-8572](#) - [cluster] Bubble up authentication errors on remote clusters
- [HUE-8572](#) - [tb] Fix JS exception when clearing table browser selection via pubsub
- [HUE-8572](#) - [tb] Add compute and namespace to DROP table endpoint
- [HUE-8572](#) - [tb] Fix log overflow in history panel
- [HUE-8573](#) - [sqoop] Out of the box import of a MySQL table
- [HUE-8573](#) - [sqoop] Avoid unrelated casting error when testing the connection
- [HUE-8574](#) - [importer] Adding Flume flows
- [HUE-8574](#) - [flume] Support updating Flume agent config
- [HUE-8574](#) - [importer] Nav Kafka stream import to Solr and Kudu part 1
- [HUE-8574](#) - [importer] Allow audit logs to be sent to Solr
- [HUE-8574](#) - [importer] Setup automatically a Flume grapping Hue HTTPD logs and put into the sample collection
- [HUE-8574](#) - [importer] Feature flag for showing the Field Editor
- [HUE-8574](#) - [cluster] Auto scaling data warehouse cluster API skeleton
- [HUE-8574](#) - [importer] Button caret to call for getting the job config
- [HUE-8575](#) - [importer] Add external multi table support
- [HUE-8575](#) - [importer] Fix file to table import.
- [HUE-8576](#) - [editor] Add backticked suggestion to the syntax checked for reserved keywords
- [HUE-8577](#) - [autocomplete] Add all currently reserved keywords for Impala
- [HUE-8577](#) - [editor] Rebuild Ace with updated dependencies
- [HUE-8577](#) - [autocomplete] Add support for Impala SHOW GRANT ROLE/USER statements
- [HUE-8577](#) - [autocomplete] Add support for Impala ALTER TABLE/VIEW SET OWNER
- [HUE-8577](#) - [autocomplete] Add Impala METHOD to reserved keywords
- [HUE-8577](#) - [autocomplete] Make previously non-reserved keywords reserved for Impala
- [HUE-8577](#) - [autocomplete] Fix issue where the statement type location is added twice
- [HUE-8578](#) - [importer] Auto select id column if present in Kudu tables
- [HUE-8578](#) - [importer] Implement Flume output
- [HUE-8578](#) - [importer] Get basic Flume ingest step integrated
- [HUE-8578](#) - [manager] Restrict API calls to admin
- [HUE-8579](#) - [core] Blacklisting certain apps like filebrowser and oozie can fail
- [HUE-8580](#) - [editor] Fix jdbc assist.
- [HUE-8580](#) - [importer] Improve usability of table import
- [HUE-8580](#) - [importer] Fix RDBMS support for scoop configured import.
- [HUE-8581](#) - [importer] Fix timing related JS exceptions
- [HUE-8581](#) - [importer] Improve query type selection layout for the field editor
- [HUE-8581](#) - [importer] Fix JS error on target namespace selection and improve layout for table import
- [HUE-8581](#) - [importer] Improve the stream import form layout
- [HUE-8581](#) - [importer] Allow typed paths in the hivechooser binding

- [HUE-8581](#) - [importer] Fix JS error for field query editor in importer
- [HUE-8582](#) - [jb] Make back button from editing a file more obvious
- [HUE-8583](#) - [fb] Surface too many buckets error
- [HUE-8588](#) - [core] Fix PAM backend has conflict with timer metrics
- [HUE-8589](#) - [core] Split cluster listing to its own API
- [HUE-8589](#) - [jb] Switch from compute to the cluster API endpoint in the job browser
- [HUE-8591](#) - [cluster] Integration skeleton for Data Warehouse v2 API
- [HUE-8591](#) - [impala] Properly pickup the selected compute cluster
- [HUE-8591](#) - [cluster] Remove extra debug info
- [HUE-8591](#) - [cluster] Step of logic simplification of the multi cluster configuration
- [HUE-8591](#) - [cluster] Display impalad hostname
- [HUE-8591](#) - [impala] Properly point to the selected cluster hostname
- [HUE-8591](#) - [cluster] Protect against override of cluster name
- [HUE-8591](#) - [core] Showing up S3 browser by default in cloud mode
- [HUE-8591](#) - [cluster] Move port to 21050
- [HUE-8591](#) - [cluster] Safeguard against localhost
- [HUE-8591](#) - [cluster] Properly use the correct cluster hostname in the editor
- [HUE-8591](#) - [cluster] Add hostname check in the cluster hostname log trace
- [HUE-8591](#) - [cluster] Split cluster template between static and dynamic clusters
- [HUE-8591](#) - [cluster] Clear the compute cache on namespace refresh from left assist
- [HUE-8591](#) - [cluster] Avoid failing when cluster is None
- [HUE-8591](#) - [cluster] Wire in API for listing and creating k8 clusters
- [HUE-8591](#) - [cluster] Plug in the list of clusters
- [HUE-8591](#) - [cluster] Adding cluster resize capabilities on the cluster page
- [HUE-8591](#) - [cluster] Add Thrift client used for the specific query server
- [HUE-8591](#) - [cluster] Refresh the context selector when namespaces are refreshed
- [HUE-8591](#) - [cluster] Hook in remote Impala coordinator URL of selected cluster
- [HUE-8591](#) - [cluster] Use default port if ont in a selected remote cluster
- [HUE-8591](#) - [cluster] Add impalad link to cluster page
- [HUE-8591](#) - [cluster] Add logic to get the corresponding Impalad name
- [HUE-8591](#) - [cluster] Add some progress bar color and effect on cluster resize
- [HUE-8591](#) - [cluster] Add proper cluster page
- [HUE-8591](#) - [cluster] Use name as clusterName throughout the calls
- [HUE-8591](#) - [cluster] Move API url to a config property
- [HUE-8591](#) - [cluster] Prevent red error popups
- [HUE-8591](#) - [cluster] Fix name of default cluster
- [HUE-8591](#) - [cluster] Use properly Impala Thrift Client on remote Impala cluster direct connection
- [HUE-8592](#) - [frontend] Enable default click to navigate for catalog entries table
- [HUE-8592](#) - [frontend] Add option to automatically refresh samples in the catalog entries table
- [HUE-8592](#) - [frontend] Create a polling catalog entries list component that waits until an entity exists
- [HUE-8594](#) - [editor] Avoid js error when lastSelectedCompute does not exist
- [HUE-8595](#) - [flume] Collect and ingest Hue balancer logs out of the box
- [HUE-8597](#) - [frontend] Use the default SQL interpreter as source type in the global search results
- [HUE-8599](#) - [frontend] Add pubSub to force clear the context catalog from the job browser
- [HUE-8599](#) - [frontend] Improve stability of the context selector
- [HUE-8600](#) - [tb] Limit Table Browser namespace selection to namespaces with active computes
- [HUE-8601](#) - [jb] Fix issue where context selector in mini jb is hidden behind expand text
- [HUE-8602](#) - [sentry] Remove ALTER and DROP table privileges for now
- [HUE-8602](#) - [sentry] Remove ALTER and DROP in the Hive section
- [HUE-8603](#) - [editor] Always show the query compatibility check results

- [HUE-8604](#) - [frontend] Use the latest opened database by default throughout
- [HUE-8606](#) - [s3] Opening S3 browser makes a call to HDFS
- [HUE-8607](#) - [tb] Include namespace when querying a table from the table browser
- [HUE-8607](#) - [tb] Fix broken drop table action in the table browser
- [HUE-8607](#) - [tb] Fix query and view table actions in the table browser
- [HUE-8609](#) - [tb] Fix exception in describe table call from the Table Browser
- [HUE-8610](#) - [tb] Make sure the created notebook for samples requests has the provided compute
- [HUE-8610](#) - [tb] Include compute in stats and describe table calls from the table browser
- [HUE-8610](#) - [core] Always send the full cluster instead of id to the APIs
- [HUE-8610](#) - [tb] Include compute when fetching samples from the table browser
- [HUE-8611](#) - [assist] Send cluster parameter with the invalidate calls
- [HUE-8612](#) - [editor] Improve the editor shortcut search to show results from all categories
- [HUE-8612](#) - [editor] Add missing keyboard shortcuts to the editor help
- [HUE-8613](#) - [tb] Send cluster when dropping databases from the table browser
- [HUE-8614](#) - [tb] Fix the create new database action in the Table Browser
- [HUE-8615](#) - [frontend] Make sure namespaces and computes always have a name in the context selector
- [HUE-8617](#) - [frontend] Add pubSub to the context selector for setting cluster/compute/namespace
- [HUE-8618](#) - [editor] Prevent js exception when typing while the context is loading
- [HUE-8619](#) - [tb] Include cluster in the partitions API call
- [HUE-8619](#) - [tb] Switch to POST for partitions API call
- [HUE-8621](#) - [editor] Add a custom Ace mode for the dark theme
- [HUE-8621](#) - [editor] Add keyboard shortcut to toggle dark mode
- [HUE-8621](#) - [editor] Add ace option to toggle dark mode
- [HUE-8621](#) - [editor] Add dark mode keyboard shortcut to the editor help
- [HUE-8623](#) - [frontend] Send cluster when checking if a table or database exists in the importer
- [HUE-8624](#) - [beeswax] Fix tests on create database to redirect on a v4 page
- [HUE-8625](#) - [editor] Prevent js exception when dragging from top search to the editor after visiting the importer
- [HUE-8626](#) - [security] Fix navigation issues after visiting the security app
- [HUE-8627](#) - [frontend] Add partition result view to the top search
- [HUE-8628](#) - [assist] Indicate context in the left assist filter placeholder
- [HUE-8629](#) - [assist] Don't show a database icon in the breadcrumb of non sql type assist panels
- [HUE-8629](#) - [assist] Customise the assist icons for streams
- [HUE-8629](#) - [assist] Add a dedicated streams assist panel
- [HUE-8629](#) - [assist] Make sure entries are loaded in left assist for non sql types
- [HUE-8629](#) - [assist] Improve assist context menu for kafka
- [HUE-8630](#) - [core] Fix TestMetastoreWithHadoop.test_basic_flow_get_apps
- [HUE-8630](#) - Fix TestRdbmsIndexer missing RdbmsIndexer
- [HUE-8630](#) - [fb] Fix TestFileBrowserWithHadoop.test_index_home_directory
- [HUE-8634](#) - HUE-8111 [core] Perform 4.3 release
- [HUE-8635](#) - [editor] Add the correct styles to the language reference context popover
- [HUE-8639](#) - [metadata] Do not do Sentry filtering when Sentry is not configured
- [HUE-8639](#) - [metadata] Include the docstring into the configuration
- [HUE-8650](#) - [importer] Fix make_notebook default namespace & compute
- [HUE-8652](#) - [frontend] Fix JS exception in jquery.hiveautocomplete when no namespaces are returned
- [HUE-8654](#) - [editor] Prevent setting empty object for namespace and compute
- [HUE-8654](#) - [editor] Guarantee a namespace and compute is set in single cluster mode
- [HUE-8655](#) - [editor] Have the location handler wait for a compute and namespace to be set
- [HUE-8656](#) - [tb] Make sure a compute is always set in the table browser
- [HUE-8660](#) - [assist] Fix file preview in left assist for files with # in the name
- [HUE-8660](#) - [core] Fix page routing issues with file browser paths containing #

- [HUE-8660](#) - [assist] Support multiple # in file names for assist preview
- [HUE-8662](#) - [core] Fix missing static URLs

Apache Impala

The following issues are fixed in CDH 6.1.0:

- [IMPALA-6202](#) - The mod() function now behaves the same as the % operator.
- [IMPALA-6373](#) - Allow primitive type widening on parquet tables. Impala only supports conversion to those types without any loss of precision:
 - TINYINT (INT32) -> SMALLINT (INT32), INT (INT32), BIGINT (INT64), DOUBLE
 - SMALLINT (INT32) -> INT (INT32), BIGINT (INT64), DOUBLE
 - INT (INT32) -> BIGINT (INT64), DOUBLE
 - FLOAT -> DOUBLE
- [IMPALA-6442](#) - Fixed the incorrectly reported Parquet file offset in error messages.
- [IMPALA-6568](#) - The Query Compilation section was added to profile outputs.
- [IMPALA-6844](#) - Impala now correctly handles a possible null pointer in the to_date() function.
- [IMPALA-7272](#) - Fixed potential crash when a min-max runtime filter is generated for a string value.
- [IMPALA-7449](#) - Fixed network throughput calculation by measuring the network throughput of each individual RPC and uses a summary counter to track avg/min/max of network throughputs.
- [IMPALA-7585](#) - Now Impala always explicitly sets user credentials after creating RPC proxy.
- [IMPALA-7668](#) - Now Impala closes URLClassLoader instances and cleans up any open temporary jar files to avoid file descriptor leaks and disk space issues.
- [IMPALA-7824](#) - Running INVALIDATE METADATA with authorization enabled no longer causes a hang when Sentry is unavailable.

Apache Kafka

The following issues are fixed in CDH 6.1.0:

- [KAFKA-2983](#) - Remove Scala consumers and related code
- [KAFKA-3702](#) - Change log level of SSL close_notify failure
- [KAFKA-4950](#) - Fix ConcurrentModificationException on assigned-partitions metric update
- [KAFKA-5098](#) - KafkaProducer should reject sends to invalid topics
- [KAFKA-5588](#) - Remove deprecated --new-consumer tools option
- [KAFKA-5697](#) - Use nonblocking poll in Streams
- [KAFKA-5891](#) - Proper handling of LogicalTypes in Cast
- [KAFKA-5919](#) - Adding checks on "version" field for tools using it
- [KAFKA-6054](#) - Add 'version probing' to Kafka Streams rebalance
- [KAFKA-6264](#) - Split log segments as needed if offsets overflow the indexes
- [KAFKA-6538](#) - Changes to enhance ByteStore exceptions thrown from RocksDBStore with more human readable info
- [KAFKA-6546](#) - Use LISTENER_NOT_FOUND error for missing listener
- [KAFKA-6562](#) - Make jackson-databind an optional clients dependency
- [KAFKA-6648](#) - Fetcher.getTopicMetadata() should return all partitions for each requested topic
- [KAFKA-6697](#) - Broker should not die if getCanonicalPath fails
- [KAFKA-6704](#) - InvalidStateStoreException from IQ when StreamThread closes store
- [KAFKA-6711](#) - GlobalStateManagerImpl should not write offsets of in-memory stores in checkpoint file
- [KAFKA-6726](#) - Fine Grained ACL for CreateTopics (KIP-277)
- [KAFKA-6730](#) - Simplify State Store Recovery
- [KAFKA-6743](#) - ConsumerPerformance fails to consume all messages [KIP-281]
- [KAFKA-6749](#) - Fixed TopologyTestDriver to process stream processing guarantee as exactly once
- [KAFKA-6750](#) - Add listener name to authentication context (KIP-282)
- [KAFKA-6760](#) - Fix response logging in the Controller

- [KAFKA-6782](#) - solved the bug of restoration of aborted messages for GlobalStateStore and KGlobalTable
- [KAFKA-6805](#) - Enable broker configs to be stored in ZK before broker start
- [KAFKA-6809](#) - Count inbound connections in the connection-creation metric
- [KAFKA-6813](#) - return to double-counting for count topology names
- [KAFKA-6841](#) - Support Prefixed ACLs (KIP-290)
- [KAFKA-6859](#) - Do not send LeaderEpochRequest for undefined leader epochs
- [KAFKA-6860](#) - Fix NPE in Kafka Streams with EOS enabled
- [KAFKA-6884](#) - Consumer group command should use new admin client
- [KAFKA-6897](#) - Prevent KafkaProducer.send from blocking when producer is closed
- [KAFKA-6906](#) - MINOR: code cleanup follow up for
- [KAFKA-6906](#) - Fixed to commit transactions if data is produced via wall clock punctuation
- [KAFKA-6927](#) - Chunked down-conversion to prevent out of memory errors on broker [KIP-283]
- [KAFKA-6935](#) - Add config for allowing optional optimization
- [KAFKA-6936](#) - Implicit materialized for aggregate, count and reduce
- [KAFKA-6944](#) - Add system tests testing the new throttling behavior using older clients/brokers
- [KAFKA-6946](#) - Keep the session id for incremental fetch when fetch responses are throttled
- [KAFKA-6949](#) - alterReplicaLogDirs() should grab partition lock when accessing log of the future replica
- [KAFKA-6955](#) - Use Java AdminClient in DeleteRecordsCommand
- [KAFKA-6967](#) - TopologyTestDriver does not allow pre-populating state stores that have change logging
- [KAFKA-6973](#) - Validate topic config message.timestamp.type
- [KAFKA-6975](#) - Fix replica fetching from non-batch-aligned log start offset
- [KAFKA-6979](#) - Add `default.api.timeout.ms` to KafkaConsumer (KIP-266)
- [KAFKA-6981](#) - Move the error handling configuration properties into the ConnectorConfig and SinkConnectorConfig classes
- [KAFKA-6986](#) - Export Admin Client metrics through Stream Threads
- [KAFKA-6991](#) - Fix ServiceLoader issue with PluginClassLoader
- [KAFKA-6997](#) - Exclude test-sources.jar when \$INCLUDE_TEST_JARS is FALSE
- [KAFKA-7001](#) - Rename errors.allowed.max property in Connect to errors.tolerance
- [KAFKA-7002](#) - Add a config property for DLQ topic's replication factor
- [KAFKA-7003](#) - Set error context in message headers
- [KAFKA-7005](#) - Remove duplicate resource class.
- [KAFKA-7006](#) - remove duplicate Scala ResourceNameType in preference to...
- [KAFKA-7007](#) - Use JSON for /kafka-acl-extended-changes path
- [KAFKA-7010](#) - Rename ResourceNameType to PatternType
- [KAFKA-7011](#) - Remove ResourceNameType field from Java Resource class.
- [KAFKA-7012](#) - Don't process SSL channels without data to process
- [KAFKA-7019](#) - Make reading metadata lock-free by maintaining an atomically-updated read snapshot
- [KAFKA-7021](#) - Reuse source based on config
- [KAFKA-7021](#) - Update upgrade guide section for reusing source topic
- [KAFKA-7023](#) - Move prepareForBulkLoad() call after customized RocksDBConfigSetter
- [KAFKA-7028](#) - Properly authorize custom principal objects
- [KAFKA-7029](#) - Update ReplicaVerificationTool not to use SimpleConsumer
- [KAFKA-7030](#) - Add configuration to disable message down-conversion (KIP-283)
- [KAFKA-7031](#) - Connect API shouldn't depend on Jersey
- [KAFKA-7032](#) - The TimeUnit is neglected by KafkaConsumer#close(long, Tim...
- [KAFKA-7039](#) - Create an instance of the plugin only it's a Versioned Plugin
- [KAFKA-7043](#) - Modified plugin isolation whitelist with recently added converters
- [KAFKA-7044](#) - Fix Fetcher.fetchOffsetsByTimes and NPE in describe consumer group
- [KAFKA-7047](#) - Added SimpleHeaderConverter to plugin isolation whitelist
- [KAFKA-7048](#) - NPE when creating connector

- [KAFKA-7050](#) - Decrease default consumer request timeout to 30s
- [KAFKA-7055](#) - Update InternalTopologyBuilder to throw TopologyException if a processor or sink is added with no upstream node attached
- [KAFKA-7056](#) - Moved Connects new numeric converters to runtime
- [KAFKA-7058](#) - Comparing schema default values using Objects#deepEquals()
- [KAFKA-7066](#) - added better logging in case of Serialisation issue
- [KAFKA-7068](#) - Handle null config values during transform
- [KAFKA-7076](#) - Skip rebuilding producer state when using old message format
- [KAFKA-7080](#) - pass segmentInterval to CachingWindowStore
- [KAFKA-7082](#) - Concurrent create topics may throw NodeExistsException
- [KAFKA-7091](#) - AdminClient should handle FindCoordinatorResponse errors
- [KAFKA-7097](#) - HOTFIX:; Set create time default to -1L in VerifiableProducer
- [KAFKA-7097](#) - VerifiableProducer does not work properly with --message-create-time argument
- [KAFKA-7104](#) - More consistent leader's state in fetch response
- [KAFKA-7111](#) - Log error connecting to node at a higher log level
- [KAFKA-7112](#) - MINOR:Only resume restoration if state is still PARTITIONS_ASSIGNED after poll
- [KAFKA-7119](#) - Handle transient Kerberos errors as non-fatal exceptions
- [KAFKA-7119](#) - Handle transient Kerberos errors on server side
- [KAFKA-7126](#) - Reduce number of rebalance for large consumer group after a topic is created
- [KAFKA-7128](#) - Follower has to catch up to offset within current leader epoch to join ISR
- [KAFKA-7136](#) - Avoid deadlocks in synchronized metrics reporters
- [KAFKA-7144](#) - Fix task assignment to be even
- [KAFKA-7147](#) - ReassignPartitionsCommand should be able to connect to broker over SSL
- [KAFKA-7164](#) - Follower should truncate after every missed leader epoch change
- [KAFKA-7168](#) - Treat connection close during SSL handshake as retrievable
- [KAFKA-7182](#) - SASL/OAUTHBEARER client response missing %x01 seps
- [KAFKA-7185](#) - Allow empty resource name when matching ACLs
- [KAFKA-7192](#) - Follow-up: update checkpoint to the reset beginning offset
- [KAFKA-7192](#) - Wipe out if EOS is turned on and checkpoint file does not exist
- [KAFKA-7194](#) - Fix buffer underflow if onJoinComplete is retried after failure
- [KAFKA-7216](#) - Ignore unknown ResourceTypes while loading acl cache
- [KAFKA-7228](#) - Set errorHandlingMetrics for dead letter queue
- [KAFKA-7231](#) - Ensure NetworkClient uses overridden request timeout
- [KAFKA-7242](#) - Reverse xform configs before saving
- [KAFKA-7250](#) - switch scala transform to TransformSupplier
- [KAFKA-7250](#) - fix transform function in scala DSL to accept TranformerSupplier
- [KAFKA-7255](#) - Fix timing issue with create/update in SimpleAclAuthorizer
- [KAFKA-7261](#) - Record 1.0 for total metric when Count stat is used for rate
- [KAFKA-7278](#) - replaceSegments() should not call asyncDeleteSegment() for segments which have been removed from segments list
- [KAFKA-7280](#) - Synchronize consumer fetch request/response handling
- [KAFKA-7284](#) - streams should unwrap fenced exception
- [KAFKA-7285](#) - Create new producer on each rebalance if EOS enabled
- [KAFKA-7286](#) - Avoid getting stuck loading large metadata records
- [KAFKA-7287](#) - Set open ACL for old consumer znode path
- [KAFKA-7296](#) - Handle coordinator loading error in TxnOffsetCommit
- [KAFKA-7298](#) - Raise UnknownProducerIdException if next sequence number is unknown
- [KAFKA-7301](#) - Fix streams Scala join ambiguous overload
- [KAFKA-7316](#) - Fix Streams Scala filter recursive call #5538

- [KAFKA-7322](#) - Fix race condition between log cleaner thread and log retention thread when topic cleanup policy is updated
- [KAFKA-7347](#) - Return not leader error for OffsetsForLeaderEpoch requests to non-replicas
- [KAFKA-7353](#) - Connect logs 'this' for anonymous inner classes
- [KAFKA-7354](#) - Fix IdlePercent and NetworkProcessorAvgIdlePercent metric
- [KAFKA-7369](#) - Handle retrievable errors in AdminClient list groups API
- [KAFKA-7385](#) - Fix log cleaner behavior when only empty batches are retained
- [KAFKA-7386](#) - streams-scala should not cache serdes
- [KAFKA-7388](#) - equal sign in property value for password
- [KAFKA-7414](#) - Out of range errors should never be fatal for follower
- [KAFKA-7434](#) - Fix NPE in DeadLetterQueueReporter
- [KAFKA-7453](#) - Expire registered channels not selected within idle timeout
- [KAFKA-7454](#) - Use lazy allocation for SslTransportLayer buffers and null them on close
- [KAFKA-7459](#) - Use thread-safe Pool for RequestMetrics.requestRateInternal
- [KAFKA-7460](#) - Fix Connect Values converter date format pattern

Apache Kudu

The following issues are fixed in CDH 6.1.0:

- [KUDU-844](#) - [webui]and other /tablet-rowsetlayout-svg improvements
- [KUDU-972](#) - Fixed an issue where Kudu's block cache memory tracking (as seen on the `/mem-trackers` web UI page) wasn't accounting for all of the overhead of the cache itself.
- [KUDU-1038](#) - When a tablet is deleted, its write-ahead log recovery directory is also deleted, if it exists.
- [KUDU-2179](#) - Fixed an issue where `kudu cluster ksck` running a snapshot checksum scan would use a single snapshot timestamp for all tablets. This caused the checksum process to fail if the checksum process took a long time and the number of tablets was sufficiently large. The tool should now be able to checksum tables even if the process takes many hours.
- [KUDU-2260](#) - Fixed a rare issue where system failure could leave unexpected null bytes at the end of metadata files, causing Kudu to be unable to restart.
- [KUDU-2293](#) - Fixed an issue with failed tablet copies that would cause subsequent tablet copies to crash the tablet server.
- [KUDU-2322](#) - Fixed a bug where leader logged excessively when the followers fell behind.
- [KUDU-2324](#) - Add gflags to disable individual maintenance ops.
- [KUDU-2335](#) - Fixed reporting of leader health during lifecycle transitions.
- [KUDU-2364](#) - When a tablet server was wiped and recreated with the same RPC address, `ksck` listed it twice, both as healthy, even though only one of them was there. This bug is now fixed by verifying the UUID of the server.
- [KUDU-2406](#) - Fixed an issue preventing Kudu from starting when using Vormetric's encrypted filesystem (secs2) on ext4.



Note: Use of Vormetric encryption for Kudu is considered experimental. We recommend you to experiment using Vormetric encryption with Kudu in a development environment.

- [KUDU-2414](#) - Fixed an issue where the C++ client would fail to reopen an expired scanner; instead, the client would retry in a tight loop and eventually timeout.
- [KUDU-2437](#) - Split a tablet into primary key ranges by size.
- [KUDU-2443](#) - Fixed moving single-replica tablets.
- [KUDU-2447](#) - Fixed a tablet server crash when a tablet is scanned with two predicates on its primary key and the predicates do not overlap.
- [KUDU-2463](#) - Fixed a bug in which incorrect results would be returned in scans following a server restart.
- [KUDU-2509](#) - Fixed use-after-free in case of WAL replay error.
- [KUDU-2510](#) - Fixed symmetric difference logging.
- [KUDU-2521](#) - Java Implementation for BloomFilter.

- [KUDU-2525](#) - Fixed an issue where the Kudu MapReduce connector's `KuduTableInputFormat` may exhaust its scan too early.
- [KUDU-2531](#) - (part 1) Ignore invalid tablet metadata files.
- [KUDU-2531](#) - (part 2) Add `-nobackup` flag to `pbcc` edit tool.
- [KUDU-2540](#) - Fixed a bug causing a tablet server crash when a write batch request from a client failed coarse-grained authorization.
- [KUDU-2580](#) - Fixed authentication token reacquisition in the C++ client.
- [KUDU-2601](#) - Correctly print newly created files.
- Fixed an error that would cause the Kudu CLI tool to unexpectedly exit when the connection to the master or tserver was abruptly closed.

Apache Oozie

The following issues are fixed in CDH 6.1.0:

- [OOZIE-2427](#) - [Kerberos] Authentication failure for the javascript resources under `/ext-2.2`
- [OOZIE-2791](#) - ShareLib installation may fail on busy Hadoop clusters
- [OOZIE-2867](#) - [Coordinators] Emphasize Region/City timezone format
- [OOZIE-2883](#) - ProxyUserService: invalid configuration error message is misleading
- [OOZIE-2914](#) - Consolidate trim calls
- [OOZIE-2934](#) - [sharelib/spark] Fix Findbugs error
- [OOZIE-2967](#) - TestStatusTransitService.testBundleStatusCoordSubmitFails fails intermittently in Apache Oozie Core 5.0.0-SNAPSHOT
- [OOZIE-2968](#) - TestJavaActionExecutor.testCredentialsSkip fails intermittently
- [OOZIE-3134](#) - Potential inconsistency between the in-memory SLA map and the Oozie database
- [OOZIE-3155](#) - [ui] Job DAG is not refreshed when a job is finished
- [OOZIE-3217](#) - Enable definition of admin users using `oozie-site.xml`
- [OOZIE-3221](#) - Rename `DEFAULT_LAUNCHER_MAX_ATTEMPS`
- [OOZIE-3224](#) - Upgrade Jetty to 9.3
- [OOZIE-3229](#) - [client] [ui] Improved SLA filtering options
- [OOZIE-3229](#) - [build] test-patch-30-distro improvement
- [OOZIE-3233](#) - Remove DST shift from the coordinator job's end time
- [OOZIE-3235](#) - Upgrade ActiveMQ to 5.15.3
- [OOZIE-3251](#) - Disable JMX for ActiveMQ in the tests
- [OOZIE-3257](#) - TestHiveActionExecutor#testHiveAction still fails
- [OOZIE-3260](#) - [sla] Remove stale item above max retries on JPA related errors from in-memory SLA map
- [OOZIE-3298](#) - [MapReduce action] External ID is not filled properly and failing MR job is treated as SUCCEEDED
- [OOZIE-3303](#) - Oozie UI does not work after Jetty 9.3 upgrade
- [OOZIE-3309](#) - Runtime error during `/v2/sla` filtering for bundle
- [OOZIE-3310](#) - SQL error during `/v2/sla` filtering
- [OOZIE-3348](#) - [Hive action] Remove dependency `hive-contrib`
- [OOZIE-3354](#) - [core] [SSH action] SSH action gets hung
- [OOZIE-3369](#) - [core] Upgrade `guru.nidi:graphviz-java` to 0.7.0
- [OOZIE-3370](#) - Property filtering is not consistent across job submission
- [OOZIE-3376](#) - [tests] TestGraphGenerator should assume JDK8 minor version at least 1.8.0_u40
- [OOZIE-3378](#) - Coordinator action's status is SUBMITTED after E1003 error

Apache Parquet

The following issues are fixed in CDH 6.1.0:

- [PARQUET-952](#) - Avro union with single type fails with 'is not a group'
- [PARQUET-1417](#) - `BINARY_AS_SIGNED_INTEGER_COMPARATOR` fails with IOBE for the same arrays with the different length

Apache Pig

There are no notable fixed issues in this release.

Cloudera Search

The following issues are fixed in CDH 6.1.0:

- [SOLR-12541](#) - Metrics handler throws an error if there are transient cores.
- [SOLR-12594](#) - MetricsHistoryHandler.getOverseerLeader fails when hostname contains hyphen.
- [SOLR-12683](#) - HashQuery will throw an exception if more than 4 partitionKeys is specified.
- [SOLR-12704](#) - Guard AddSchemaFieldsUpdateProcessorFactory against null field names and field values.
- [SOLR-12750](#) - Migrate API should lock the collection instead of shard.
- [SOLR-12765](#) - Incorrect format of JMX cache stats.
- [SOLR-12836](#) - ZkController creates a cloud solr client with no connection or read timeouts.

For more information on the fixes, see the upstream release notes:

- [Apache Solr 7.1 Release Notes](#)
- [Apache Solr 7.2 Release Notes](#)
- [Apache Solr 7.3 Release Notes](#)
- [Apache Solr 7.4 Release Notes](#)

Apache Sentry

The following issues are fixed in CDH 6.1.0:

- [SENTRY-853](#) - Handle show grant on auth failure correctly
- [SENTRY-1572](#) - SentryMain() shouldn't dynamically load tool class
- [SENTRY-1896](#) - Optimize retrieving entities by other entity types
- [SENTRY-1944](#) - Optimize DelegateSentryStore.getGroupsByRoles() and update SentryGenericPolicyProcessor to retrieve roles to group mapping in a single transaction
- [SENTRY-2085](#) - Sentry error handling exposes SentryGroupNotFoundException externally.
- [SENTRY-2092](#) - Drop Role log message shows "Creating role"
- [SENTRY-2115](#) - Incorrect behavior of HMsFollower when HDFSSync feature is disabled.
- [SENTRY-2127](#) - Fix unstable unit test TestColumnEndToEnd.testCrossDbTableOperations
- [SENTRY-2141](#) - Sentry Privilege TimeStamp is not converted to grantTime in HivePrivilegeInfo correctly
- [SENTRY-2143](#) - Table renames should synchronize with Sentry
- [SENTRY-2168](#) - Altering table will not update sentry permissions when HDFS sync is disabled
- [SENTRY-2194](#) - Upgrade Sentry hadoop-version dependency to 2.7.5
- [SENTRY-2198](#) - Update to Kafka 1.0.0.
- [SENTRY-2199](#) - Bump Hive version from 2.3.2 to 2.3.3
- [SENTRY-2200](#) - Migrate 3.x Datanucleus unsupported configurations to 4.1 Datanucleus
- [SENTRY-2209](#) - Incorrect class in SentryHdfsMetricsUtil.java.
- [SENTRY-2210](#) - AUTHZ_PATH should have index on the foreign key AUTHZ_OBJ_ID
- [SENTRY-2213](#) - Increase schema version from 2.0.0 to 2.1.0
- [SENTRY-2214](#) - Sentry should not allow URI grants to EMPTY or NULL locations
- [SENTRY-2224](#) - Support SHOW GRANT on HIVE_OBJECT
- [SENTRY-2231](#) - Fix URI check on List Privileges by Provider in SentryStore
- [SENTRY-2238](#) - Explicitly set Database on SentryHivePrivilegeObjectDesc
- [SENTRY-2244](#) - Alter sentry role or user at granting privilege can avoid extra query to database
- [SENTRY-2245](#) - Remove privileges that do not associate with a role or a user
- [SENTRY-2251](#) - Update user privileges based on changes to authorizables
- [SENTRY-2252](#) - Normalize the Sentry store API's to handle both user/role privileges
- [SENTRY-2255](#) - alter table set owner command can be executed only by user with proper privilege
- [SENTRY-2258](#) - Remove user when it is not associated with other objects

- [SENTRY-2259](#) - SQL CONSTRAINT name is too long for Oracle 11.2
- [SENTRY-2261](#) - Implement JSONAlterDatabaseMessage to write HMS alter database events
- [SENTRY-2262](#) - Sentry client is not compatible when connecting to Sentry 2.0
- [SENTRY-2264](#) - It is possible to elevate privileges from DROP using alter table rename
- [SENTRY-2270](#) - Illegal privileges on columns can be granted on Hive
- [SENTRY-2271](#) - Wrong log messages/method names in SentrySchema related classes.
- [SENTRY-2273](#) - Create the SHOW GRANT USER task for Hive
- [SENTRY-2280](#) - The request received in SentryPolicyStoreProcessor.sentry_notify_hms_event is null
- [SENTRY-2281](#) - list_privileges_by_user() fails with a JDODetachedFieldAccessException
- [SENTRY-2293](#) - Fix logging parameters on SentryHDFSProcessor
- [SENTRY-2294](#) - Add requestorUsername to client.notifyHmsEvent() method
- [SENTRY-2295](#) - Owner privileges should not be granted to sentry admin users
- [SENTRY-2307](#) - Avoid HMS event synchronization while sentry is fetching full snapshot
- [SENTRY-2309](#) - Port ModifiedCatch NPE thrown when fetching Partitions with no corresponding SDS entry
- [SENTRY-2310](#) - Sentry is not be able to fetch full update subsequently, when there is HMS restart in the snapshot process.
- [SENTRY-2312](#) - Update owner privileges for table when owner is changed.
- [SENTRY-2313](#) - alter database set owner command can be executed only by user with proper privilege
- [SENTRY-2315](#) - The grant all operation is not dropping the create/alter/drop/index/lock privileges
- [SENTRY-2324](#) - Allow sentry to fetch configurable notifications from HMS
- [SENTRY-2332](#) - Load hadoop default configuration when starting sentry service
- [SENTRY-2333](#) - Create index AUTHZ_PATH_FK_IDX at table AUTHZ_PATH for Postgres only when it does not exist
- [SENTRY-2352](#) - User roles with ALTER on a table can not show or describe the table on which they have ALTER
- [SENTRY-2359](#) - Object owner is unable to grant privileges: SentryAccessDeniedException
- [SENTRY-2373](#) - Incorrect WARN message when processing add partition messages
- [SENTRY-2376](#) - Bump Jackson libraries versions to 1.9.13 and 2.9.6
- [SENTRY-2392](#) - Add metrics statistics to list_user_privileges and list_role_privileges API
- [SENTRY-2395](#) - ALTER VIEW AS SELECT is asking for CREATE privileges instead of ALTER
- [SENTRY-2403](#) - Incorrect naming in RollingFileWithoutDeleteAppender
- [SENTRY-2406](#) - Make sure inputHierarchy and outputHierarchy have unique values
- [SENTRY-2409](#) - ALTER TABLE SET OWNER does not allow to change the table if using only the table name
- [SENTRY-2417](#) - LocalGroupMappingService class docs do not accurately reflect required INI format
- [SENTRY-2419](#) - Log where sentry stands in the process of persisting the snapshot
- [SENTRY-2423](#) - Increase the allocation size for auto-increment of id's for Snapshot tables.
- [SENTRY-2427](#) - Use Hadoop KerberosName class to derive shortName
- [SENTRY-2429](#) - Transfer database owner drops table owner
- [SENTRY-2432](#) - PortThe case of a username is ignored when determining object ownership
- [SENTRY-2433](#) - Dropping object privileges does not include update of dropping user privileges

Apache Spark

The following issues are fixed in CDH 6.1.0:

- [SPARK-4502](#) - [SQL] Rename to spark.sql.optimizer.nestedSchemaPruning.enabled
- [SPARK-19355](#) - Revert[SPARK-25352]
- [SPARK-19724](#) - [SQL] allowCreatingManagedTableUsingNonemptyLocation should have legacy prefix
- [SPARK-20327](#) - [YARN] Follow up: fix resource request tests on Hadoop 3.
- [SPARK-20327](#) - [CORE][YARN] Add CLI support for YARN custom resources, like GPUs
- [SPARK-20360](#) - [PYTHON] reprs for interpreters
- [SPARK-20594](#) - Adjust fix for CDH version of Hive.
- [SPARK-21318](#) - [SQL] Improve exception message thrown by `lookupFunction`
- [SPARK-21402](#) - [SQL] Fix java array of structs deserialization

- [SPARK-22666](#) - [ML][FOLLOW-UP] Improve testcase to tolerate different schema representation
- [SPARK-23401](#) - [PYTHON][TESTS] Add more data types for PandasUDFTests
- [SPARK-23429](#) - [CORE] Add executor memory metrics to heartbeat and expose in executors REST API
- [SPARK-23549](#) - [SQL] Rename config spark.sql.legacy.compareDateTimestampInTimestamp
- [SPARK-23715](#) - Revert "[SQL] the input of to/from_utc_timestamp can not have timezone
- [SPARK-23907](#) - [SQL] Revert regr_* functions entirely
- [SPARK-23972](#) - Revert "[BUILD][SQL] Update Parquet to 1.10.0."
- [SPARK-24157](#) - [SS][FOLLOWUP] Rename to spark.sql.streaming.noDataMicroBatches.enabled
- [SPARK-24324](#) - [PYTHON][FOLLOW-UP] Rename the Conf to spark.sql.legacy.execution.pandas.groupedMap.assignColumnsByName
- [SPARK-24518](#) - Revert "[CORE] Using Hadoop credential provider API to store password"
- [SPARK-24519](#) - [CORE] Compute SHUFFLE_MIN_NUM_PARTS_TO_HIGHLY_COMPRESS only once
- [SPARK-24709](#) - [SQL][FOLLOW-UP] Make schema_of_json's input json as literal only
- [SPARK-24709](#) - [SQL][2.4] use str instead of basestring in isinstance
- [SPARK-24777](#) - [SQL] Add write benchmark for AVRO
- [SPARK-24787](#) - [CORE] Revert hsync in EventLoggingListener and make FsHistoryProvider to read lastBlockBeingWritten data for logs
- [SPARK-24918](#) - [CORE] Executor Plugin API
- [SPARK-25021](#) - [K8S][BACKPORT] Add spark.executor.pyspark.memory limit for K8S
- [SPARK-25044](#) - [FOLLOW-UP] Change ScalaUDF constructor signature
- [SPARK-25314](#) - [SQL] Fix Python UDF accessing attributes from both side of join in join conditions
- [SPARK-25318](#) - Add exception handling when wrapping the input stream during the the fetch or stage retry in response to a corrupted block
- [SPARK-25321](#) - [ML] Fix local LDA model constructor
- [SPARK-25384](#) - [SQL] Clarify fromJsonForceNullableSchema will be removed in Spark 3.0
- [SPARK-25416](#) - [SQL] ArrayPosition function may return incorrect result when right expression is implicitly down casted
- [SPARK-25417](#) - [SQL] ArrayContains function may return incorrect result when right expression is implicitly down casted
- [SPARK-25422](#) - [CORE] Don't memory map blocks streamed to disk.
- [SPARK-25425](#) - [SQL][BACKPORT-2.4] Extra options should override session options in DataSource V2
- [SPARK-25450](#) - [SQL] PushProjectThroughUnion rule uses the same exprId for project expressions in each Union child, causing mistakes in constant propagation
- [SPARK-25454](#) - [SQL] add a new config for picking minimum precision for integral literals
- [SPARK-25460](#) - [BRANCH-2.4][SS] DataSourceV2: SS sources do not respect SessionConfigSupport
- [SPARK-25468](#) - [WEBUI] Highlight current page index in the spark UI
- [SPARK-25469](#) - [SQL] Eval methods of Concat, Reverse and ElementAt should use pattern matching only once
- [SPARK-25495](#) - [SS] FetchedData.reset should reset all fields
- [SPARK-25502](#) - [CORE][WEBUI] Empty Page when page number exceeds the retainedTask size.
- [SPARK-25503](#) - [CORE][WEBUI] Total task message in stage page is ambiguous
- [SPARK-25505](#) - [SQL] The output order of grouping columns in Pivot is different from the input order
- [SPARK-25505](#) - [SQL][FOLLOWUP] Fix for attributes cosmetically different in Pivot clause
- [SPARK-25509](#) - [CORE] Windows doesn't support POSIX permissions
- [SPARK-25519](#) - [SQL] ArrayRemove function may return incorrect result when right expression is implicitly downcasted.
- [SPARK-25521](#) - [SQL] Job id showing null in the logs when insert into command Job is finished.
- [SPARK-25522](#) - [SQL] Improve type promotion for input arguments of elementAt function
- [SPARK-25533](#) - [CORE][WEBUI] AppSummary should hold the information about succeeded Jobs and completed stages only
- [SPARK-25535](#) - [CORE] Work around bad error handling in commons-crypto.
- [SPARK-25536](#) - [CORE] metric value for METRIC_OUTPUT_RECORDS_WRITTEN is incorrect

- [SPARK-25538](#) - [SQL] Zero-out all bytes when writing decimal
- [SPARK-25543](#) - [K8S] Print debug message iff `execIdsRemovedInThisRound` is not empty.
- [SPARK-25546](#) - [CORE] Don't cache value of `EVENT_LOG_CALLSITE_LONG_FORM`.
- [SPARK-25568](#) - [CORE] Continue to update the remaining accumulators when failing to update one accumulator
- [SPARK-25579](#) - [SQL] Use quoted attribute names if needed in pushed ORC predicates
- [SPARK-25591](#) - [PYSPARK][SQL] Avoid overwriting deserialized accumulator
- [SPARK-25601](#) - [PYTHON] Register Grouped aggregate UDF Vectorized UDFs for SQL Statement
- [SPARK-25602](#) - [SQL] `SparkPlan.getByteArrayRdd` should not consume the input when not necessary
- [SPARK-25636](#) - [CORE] `spark-submit` cuts off the failure reason when there is an error connecting to master
- [SPARK-25644](#) - [SS] Fix java `foreachBatch` in `DataStreamWriter`
- [SPARK-25660](#) - [SQL] Fix for the backward slash as CSV fields delimiter
- [SPARK-25669](#) - [SQL] Check CSV header only when it exists
- [SPARK-25673](#) - [BUILD] Remove Travis CI which enables Java lint check
- [SPARK-25674](#) - [SQL] If the records are incremented by more than 1 at a time, the number of bytes might rarely ever get updated
- [SPARK-25674](#) - [FOLLOW-UP] Update the stats for each `ColumnarBatch`
- [SPARK-25690](#) - [SQL] Analyzer rule `HandleNullInputsForUDF` does not stabilize and can be applied infinitely
- [SPARK-25697](#) - [CORE] When `zstd` compression enabled, `InProgress` application is throwing Error in the history webui
- [SPARK-25704](#) - [CORE] Allocate a bit less than `Int.MaxValue`
- [SPARK-25708](#) - [SQL] `HAVING` without `GROUP BY` means global aggregate
- [SPARK-25714](#) - Fix Null Handling in the Optimizer rule `BooleanSimplification`
- [SPARK-25718](#) - [SQL] Detect recursive reference in Avro schema and throw exception
- [SPARK-25727](#) - [SQL] Add `outputOrdering` to `otherCopyArgs` in `InMemoryRelation`
- [SPARK-25738](#) - [SQL] Fix `LOAD DATA INPATH` for hdfs port
- [SPARK-25741](#) - [WEBUI] Long URLs are not rendered properly in web UI
- [SPARK-25768](#) - [SQL] fix constant argument expecting UDAFs
- [SPARK-25776](#) - [CORE] The disk write buffer size must be greater than 12
- [SPARK-25793](#) - [ML] call `SaveLoadV2_0.load` for `classNameV2_0`
- [SPARK-25816](#) - [SQL] Fix attribute resolution in nested extractors
- [SPARK-25822](#) - [PYSPARK] Fix a race condition when releasing a Python worker
- [SPARK-25827](#) - [CORE] Avoid converting incoming encrypted blocks to byte buffers
- [SPARK-25840](#) - [BUILD] ``make-distribution.sh`` should not fail due to missing `LICENSE-binary`
- [SPARK-25842](#) - [SQL] Deprecate `rangeBetween` APIs introduced in SPARK-21608
- [SPARK-25854](#) - [BUILD] fix ``build/mvn`` not to fail during Zinc server shutdown
- [SPARK-25855](#) - [CORE] Don't use erasure coding for event logs by default
- [SPARK-25871](#) - [STREAMING] Don't use EC for streaming WAL
- [SPARK-25904](#) - [CORE] Allocate arrays smaller than `Int.MaxValue`
- [SPARK-25918](#) - [SQL] `LOAD DATA LOCAL INPATH` should handle a relative path

Apache Sqoop

The following issues are fixed in CDH 6.1.0:

- [SQOOP-2567](#) - SQOOP import for Oracle fails with invalid precision/scale for decimal
- [SQOOP-2949](#) - SQL Syntax error when split-by column is of character type and min or max value has single quote inside it
- [SQOOP-3042](#) - Sqoop does not clear compile directory under `/tmp/sqoop-username/compile` automatically
- [SQOOP-3052](#) - Introduce Gradle based build for Sqoop to make it more developer friendly / open
- [SQOOP-3082](#) - Sqoop import fails after TCP connection reset if split by datetime column
- [SQOOP-3224](#) - Mainframe FTP transfer should have an option to use binary mode for transfer
- [SQOOP-3225](#) - Mainframe module FTP listing parser should cater for larger datasets on disk

- [SQOOP-3267](#) - Incremental import to HBase deletes only last version of column
- [SQOOP-3288](#) - Changing OracleManager to use CURRENT_TIMESTAMP instead of
- [SQOOP-3300](#) - Implement JDBC and Kerberos tools for HiveServer2 support
- [SQOOP-3309](#) - Implement HiveServer2 client
- [SQOOP-3326](#) - Mainframe FTP listing for GDG should filter out non-GDG datasets in a heterogeneous listing
- [SQOOP-3327](#) - Mainframe FTP needs to include "Migrated" datasets when parsing the FTP list
- [SQOOP-3328](#) - Implement an alternative solution for Parquet reading and writing
- [SQOOP-3330](#) - Sqoop --append does not work with -Dmapreduce.output.basename
- [SQOOP-3331](#) - Add Mainframe FTP integration test for GDG dataset.
- [SQOOP-3333](#) - Change default behavior of the MS SQL connector to non-resilient.
- [SQOOP-3335](#) - Add Hive support to the new Parquet writing implementation
- [SQOOP-3353](#) - Sqoop should not check incremental constraints for HBase imports
- [SQOOP-3378](#) - Error during direct Netezza import/export can interrupt process in uncontrolled ways

Apache Zookeeper

The following issues are fixed in CDH 6.1.0:

- [ZOOKEEPER-706](#) - Large numbers of watches can cause session re-establishment to fail
- [ZOOKEEPER-1382](#) - Zookeeper server holds onto dead/expired session ids in the watch data structures

Unsupported Features in CDH 6.1.0

This page lists the unsupported features in CDH 6.1.x. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.1.0](#) on page 1078.

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 1040
- [YARN Unsupported Features](#) on page 1040

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.x:

- ACLs for the NFS gateway
- Aliyun Cloud Connector
- HDFS Router Based Federation
- HDFS truncate
- More than two NameNodes
- NameNode Federation
- Openstack Swift
- Quota support for Storage Types
- SFTP FileSystem
- Upgrade Domain
- Variable length block
- ZStandard Compression Codec

YARN Unsupported Features

The following YARN features are not supported in CDH 6.1.x:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers
- Distributed Scheduling

- Docker on YARN (DockerContainerExecutor)
- Native Services
- New Aggregated Log File Format
- Node Labels
- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Estimator Service
- Resource Profiles
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.1.x:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction
- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation
- Client tarball
- Serial replication
- Rolling upgrade from CDH 5 HBase versions

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.1.x:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution
- Hive Metastore - Derby
- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))

- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka features are not supported in CDH 6.1.x:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.
- Idempotent and transactional capabilities in the producer are currently an unsupported beta feature given their maturity and complexity. This feature will be supported in a future release.
- Kafka Connect is included in CDH 6.1.0, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- Kafka Streams is included in CDH 6.0.0, but is not supported. Instead, use Spark and Spark Streaming have a fully functional ETL/stream processing pipeline. See [Using Kafka with Apache Spark Streaming for Stream Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.1.0, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.
- The legacy Scala clients (producer and consumer) that are under the `kafka.producer.*` and `kafka.consumer.*` package are removed in CDH 6.1.0. See [Deprecated Scala-based Client API and New Java Client API](#) on page 1259.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.1.x:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.1.x:

- Pig on Tez is not supported in CDH 6.1.x ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.1.x:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.1.x:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

[\(Known Issue\)](#)

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.x, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.1.x:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)
- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is supported, but the following features of it *are not*:
 - Continuous processing, which is still experimental, is not supported
 - Stream static joins with HBase have not been tested and therefore are not supported
- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.1.x:

- `import-mainframe`

Incompatible Changes in CDH 6.1.0**Important:**

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.1.0, grouped by component:

Apache Accumulo

CDH 6.1.0 introduces no new incompatible changes for Apache Accumulo.

Apache Avro

API Changes

One method was removed in CDH 6.0.0:

```
GenericData.toString (Object datum, StringBuilder buffer)
```

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires GenericEnumSymbol - likely to break current Generic API users that often have String or Java Enum for these fields
- [AVRO-1502](#): Avro Objects now Serializable - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be HTrace
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.
- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).
- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. The only additional configuration required to use HBase2Sink is to replace the component name in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

com.google.common.collect.ImmutableMap

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those

methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

- [HDFS Incompatible Changes](#) on page 1045
- [MapReduce](#) on page 1046
- [YARN](#) on page 1046

HDFS Incompatible Changes

CDH 6.1.0 introduces no new incompatible changes for HDFS.

CDH 6.0.1 introduces no new incompatible changes for HDFS.

CDH 6.0.0, introduces the following incompatible changes for HDFS:

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.
- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSClient#mkdirs` and `DFSClient#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.
- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.
 - All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.

- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0
- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.
- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0
 - asm from 3.2 to 5.0.4

MapReduce

CDH 6.0.1 introduces no new incompatible changes for MapReduce.

CDH 6.0.0, introduces the following incompatible changes:

- Support for MapReduce v1 has been dropped from CDH 6.0.0.
- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

CDH 6.1.0 introduces no new incompatible changes for YARN.

CDH 6.0.1 introduces no new incompatible changes for YARN.

CDH 6.0.0 introduces no new incompatible changes for YARN.

Apache HBase

CDH 6.1.x contains the following downstream HBase incompatible change:

`hbase.security.authorization`

The default value for `hbase.security.authorization` has been changed from `true` to `false`. Secured clusters should make sure to explicitly set it to `true` in XML configuration file before upgrading to one of these versions ([HBASE-19483](#)). True as the default value of `hbase.security.authorization` was changed because not all clusters need authorization. (History: [HBASE-13275](#)) Rather, only the clusters which need authorization should set this configuration as `true`.

Incompatible Changes

For more information about upstream incompatible changes, see the Apache Reference Guide [Incompatible Changes](#) and [Upgrade Paths](#).

CDH 6.1.0 introduces the following incompatible changes for HBase:

- [HBASE-20270](#): Error triggered command help is no longer available.
- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.

CDH 6.0.x introduces the following upstream HBase incompatible changes:

- [HBASE-20406](#): Prevent Thrift in HTTP mode to accept the TRACE and OPTIONS methods.
- Public interface API changes:
 - [HBASE-15607](#): Admin
 - [HBASE-19112](#), [HBASE-18945](#): Cell
 - Region, Store, `HBaseTestingUtility`

- [HBASE-18792](#): hbase-2 needs to defend against hbck operations
- [HBASE-15982](#): Interface ReplicationEndpoint extends Guava's Service.
- [HBASE-18995](#): Split CellUtil into public CellUtil and PrivateCellUtil for Internal use only.
- [HBASE-19179](#): Purged the hbase-prefix-tree module and all references from the code base.
- [HBASE-17595](#): Add partial result support for small/limited scan; Now small scan and limited scan could also return partial results.
- [HBASE-16765](#): New default split policy, SteppingSplitPolicy.
- [HBASE-17442](#): Move most of the replication related classes from hbase-client to hbase-replication package.
- [HBASE-16196](#): The bundled JRuby 1.6.8 has been updated to version 9.1.9.0.
- [HBASE-18811](#): Filters have been moved from Public to LimitedPrivate.
- [HBASE-18697](#): Replaced hbase-shaded-server jar with hbase-shaded-mapreduce jar.
- [HBASE-18640](#): Moved mapreduce related classes out of hbase-server into separate hbase-mapreduce jar .
- [HBASE-19128](#): Distributed Log Replay feature has been removed.
- [HBASE-19176](#): Hbase-native-client has been removed.
- [HBASE-17472](#): Changed semantics of granting new permissions. Earlier, new grants would override previous permissions, but now, the new and existing permissions get merged.
- [HBASE-18374](#): Previous "mutate" latency metrics has been renamed to "put" metrics.
- [HBASE-15740](#): Removed Replication metric source.shippedKBs in favor of source.shippedBytes.
- [HBASE-13849](#): Removed restore and clone snapshot from the WebUI.
- [HBASE-13252](#): The concept of managed connections in HBase (deprecated before) has now been extinguished completely, and now all callers are responsible for managing the lifecycle of connections they acquire.
- [HBASE-14045](#): Bumped thrift version to 0.9.2.
- [HBASE-5401](#): Changes to number of tasks PE runs when clients are mapreduce. Now tasks == client count. Previous we hardcoded ten tasks per client instance.

Changed Behavior

CDH 6.1.x contains the following HBase behavior changes:

- [HBASE-14350](#): Assignment Manager v2 - Split/Merge have moved to the Master; it runs them now. Hooks around Split/Merge are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-18271](#): Moved to internal shaded netty.
- [HBASE-17343](#): Default MemStore to be CompactingMemStore instead of DefaultMemStore. In-memory compaction of CompactingMemStore demonstrated sizable improvement in HBase's write amplification and read/write performance.
- [HBASE-19092](#): Make Tag IA.LimitedPrivate and expose for CPs.
- [HBASE-18137](#): Replication gets stuck for empty WALs.
- [HBASE-17513](#): Thrift Server 1 uses different QOP settings than RPC and Thrift Server 2 and can easily be misconfigured so there is no encryption when the operator expects it.
- [HBASE-16868](#): Add a replicate_all flag to replication peer config. The default value is true, which means all user tables (REPLICATION_SCOPE != 0) will be replicated to peer cluster.
- [HBASE-19341](#): Ensure Coprocessors can abort a server.
- [HBASE-18469](#): Correct RegionServer metric of totalRequestCount.
- [HBASE-17125](#): Marked Scan and Get's setMaxVersions() and setMaxVersions(int) as deprecated. They are easy to misunderstand with column family's max versions, so use readAllVersions() and readVersions(int) instead.
- [HBASE-16567](#): Core is now up on protobuf 3.1.0 (Coprocessor Endpoints and REST are still on protobuf 2.5.0).
- [HBASE-14004](#): Fix inconsistency between Memstore and WAL which may result in data in remote cluster that is not in the origin (Replication).
- [HBASE-18786](#): FileNotFoundException opening a StoreFile in a primary replica now causes a RegionServer to crash out where before it would be ignored (or optionally handled via close/reopen).
- [HBASE-17956](#): Raw scans will also read TTL expired cells.
- [HBASE-17017](#): Removed per-region latency histogram metrics.

- [HBASE-19483](#): Added ACL checks to RSGroup commands - On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands.
- [HBASE-19358](#): Added ACL checks to RSGroup commands (HBASE-19483): On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands. Improved stability of splitting log when do failover.
- [HBASE-18883](#): Updated our Curator version to 4.0 - Users who experience classpath issues due to version conflicts are recommended to use either the hbase-shaded-client or hbase-shaded-mapreduce artifacts.
- [HBASE-16388](#): Prevent client threads being blocked by only one slow region server - Added a new configuration to limit the max number of concurrent request to one region server.
- [HBASE-15212](#): New configuration to limit RPC request size to protect the server against very large incoming RPC requests. All requests larger than this size will be immediately rejected before allocating any resources.
- [HBASE-15968](#): This issue resolved two long-term issues in HBase: 1) Puts may be masked by a delete before them, and 2) Major compactions change query results. Offers a new behavior to fix this issue with a little performance reduction. Disabled by default. See the issue for details and caveats.
- [HBASE-13701](#): SecureBulkLoadEndpoint has been integrated into HBase core as default bulk load mechanism. It is no longer needed to install it as a coprocessor endpoint.
- [HBASE-9774](#): HBase native metrics and metric collection for coprocessors.
- [HBASE-18294](#): Reduce global heap pressure: flush based on heap occupancy.

Apache Hive/Hive on Spark/HCatalog

Apache Hive

The following changes are introduced to Hive in CDH 6.0.0, and are not backwards compatible:

- [Change in RLIKE and REGEXP Use](#) on page 1248
- [UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting](#) on page 1248
- [Support for UNION DISTINCT](#) on page 1249
- [OFFLINE and NO_DROP Options Removed from Table and Partition DDL](#) on page 1250
- [DESCRIBE Query Syntax Change](#) on page 1250
- [CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names](#) on page 1250
- [Reserved and Non-Reserved Keyword Changes in HiveQL](#) on page 1250
- [Apache Hive API Changes in CDH 6.0.0](#) on page 1252
- [Apache Hive Configuration Changes in CDH 6.0.0](#) on page 1253
- [HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes](#) on page 1256
- [Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column](#) on page 1256
- [Hive Logging Framework Switched to SLF4J/Log4j 2](#) on page 1256
- [Deprecated Parquet Java Classes Removed from Hive](#) on page 1256
- [Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms](#) on page 1257
- [S3N Connector Is Removed from CDH 6.0](#) on page 1257
- [Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request](#) on page 1257
- [Support Added for Escaping Carriage Returns and New Line Characters for Text Files \(LazySimpleSerDe\)](#) on page 1258
- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1258

Change in RLIKE and REGEXP Use

A change in Hive to improve support for multiple columns restricts how you can use RLIKE, also called REGEXP, to compare operands. `RLIKE (A, B)` is no longer supported. `A RLIKE B` continues to be supported. See [Hive-11600](#).

Changing Table File Format from ORC with the ALTER TABLE Command Not Supported in CDH 6

Changing the table file format from ORC to another file format with the ALTER TABLE command is not supported in CDH 6 (it returns an error).

UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting

Prior to this change, Hive performed implicit casts when data types from different type groups were specified in queries that use `UNION ALL`. For example, before CDH 6.0, if you had the two following tables:

Table "one"

| one.col_1 | one.col_2 | one.col_3 |
|-----------|-----------|-----------|
| 21 | hello_all | b |

Where `col_1` datatype is `int`, `col_2` datatype is `string`, and `col_3` datatype is `char(1)`.

Table "two"

| two.col_4 | two.col_5 | two.col_6 |
|-----------|-----------|-----------|
| 75.0 | abcde | 45 |

Where `col_4` datatype is `double`, `col_5` datatype is `varchar(5)`, and `col_6` datatype is `int`.

And you ran the following `UNION ALL` query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS col_3 FROM two;
```

You received the following result set:

| _u1.col_1 | _u1.col_2 | _u1.col_3 |
|-----------|-----------|-----------|
| 75.0 | abcde | 4 |
| 21.0 | hello | b |

Note that this statement implicitly casts the values from table `one` with the following errors resulting in data loss:

- `one.col_1` is cast to a `double` datatype
- `one.col_2` is cast to a `varchar(5)` datatype, which truncates the original value from `hello_all` to `hello`
- `one.col_3` is cast to a `char(1)` datatype, which truncates the original value from `45` to `4`

In CDH 6.0, no implicit cast is performed across different type groups. For example, `STRING`, `CHAR`, and `VARCHAR` are in one type group, and `INT`, `BIGINT`, and `DECIMAL` are in another type group, and so on. So, in CDH 6.0 and later, the above query that uses `UNION ALL`, returns an exception for the columns that contain datatypes that are not part of a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:

- When specified before, these clauses are applied to the query before `UNION ALL` is applied.
- When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
- The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.
- **Behavior in CDH 6:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
 - The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:
 - `ENABLE | DISABLE NO_DROP [CASCADE]`
 - `ENABLE | DISABLE OFFLINE`
 - `ALTER TABLE ... IGNORE PROTECTION`
- The following support has also been removed from the `HiveMetastoreClient` class:

The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, `data`). *Non-reserved keywords* can be used as table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|---------|------------|------------|----------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |
| START | | | |

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|----------|-----------|-----------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |
| BOOLEAN | BOTH | BY | CREATE |
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |

| | | | |
|--------|---------|----------|--------|
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|--------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLTIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|---------------|---------|-------------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |
| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252
- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a `CLOB` data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like "=", "<>", and "!=" might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with `CLOB` data types. There is no equivalent "<>" operator that is compatible with `CLOB`. So there is no equivalent operator for the above example that uses the "<>" inequality operator. The equivalent for "=" is the `LIKE` operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253
- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(hive.server2.enable.impersonation\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.
3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned table but do not filter on the partition column. | <code>false</code> |
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)
- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (`hive.server2.enable.impersonation`) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`
 - **Description:** Sets the file format in which a query's intermediate results are stored.
3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:

```
org.apache.hive.service.cli.thrift
```

To the following *new* namespace:

```
org.apache.hive.service.rpc.thrift
```

- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale of 5, the value returned for zero was returned as 0. *Now*, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside

of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the `INPUTFORMAT` to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat` and set the `OUTPUTFORMAT` to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`
- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanup(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|---|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |
| REF_GENERATION | Specifies how values in the SELF_REFERENCING_COL_NAME column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the SerDe property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, 'r' or 'n' cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the `LazySerDeParameters` class. For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

There are no incompatible changes in this release.

Apache Impala

There are no incompatible changes in this release.

Apache Kafka

Incompatible Changes Introduced in CDH 6.1.0

Scala-based Client API Removed

Scala-based clients were deprecated in a previous release and are removed as of CDH 6.1.0.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are effected:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Default Behaviour Change

[KAFKA-7050](#): The default value for `request.timeout.ms` is decreased to 30 seconds. In addition, a new logic is added that makes the `JoinGroup` requests ignore this timeout.

Incompatible Changes Introduced in CDH 6.0.1

CDH 6.0.1 introduces no new incompatible changes for Kafka.

Incompatible Changes Introduced in CDH 6.0.0

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see the previous entry). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`
- `kafka.tools.ExportZkOffset`
- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- GroupCoordinatorNotAvailableException
- GroupLoadInProgressException
- NotCoordinatorForGroupException
- kafka.common.KafkaStorageException

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Apache Kudu

Client Library Compatibility

- The Kudu 1.8 Java client library is API- and ABI-compatible with Kudu 1.7. Applications written against Kudu 1.7 will compile and run against the Kudu 1.8 client library and vice-versa.
- The Kudu 1.8 C++ client is API- and ABI-forward-compatible with Kudu 1.7. Applications written and compiled against the Kudu 1.7 client library will run without modification against the Kudu 1.8 client library. Applications written and compiled against the Kudu 1.8 client library will run without modification against the Kudu 1.7 client library.
- The Kudu 1.8 Python client is API-compatible with Kudu 1.7. Applications written against Kudu 1.7 will continue to run against the Kudu 1.8 client and vice-versa.

Apache Oozie

There are no incompatible changes in this release.

Apache Parquet

Packages and Group ID Renamed

As a part of the Apache incubation process, all Parquet packages and the project's group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|----------------------------|
| Java Package Names | parquet.* | org.apache.parquet.* |
| Group ID | com.twitter | org.apache.parquet |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update *.java files:

| Before | After |
|------------------------------|---|
| <pre>import parquet.*;</pre> | <pre>import org.apache.parquet.*;</pre> |

Update pom.xml:

| Before | After |
|---|--|
| <pre> <dependency> <groupId> com.twitter </groupId> <version> \${parquet.version} </version> </dependency> </pre> | <pre> <dependency> <groupId> org.apache.parquet </groupId> <version> \${parquet.version} </version> </dependency> </pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestedSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestedSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Pig

The following change is introduced to Pig in CDH 6.0 and is not a backwards compatible change. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0 JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 55: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|--|---------------------------------|---------|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|--|
| VAR (stats) | Generates the variance of a set of values. | variance | None |
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 1062. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 1062. |
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way to filter using a logical disjunction over many values. | IN | None |

For more information about using Hive UDFs, see

https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 56: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|------------------------------------|----------|------------|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |

| | | |
|------------------|---|---|
| Examples: | <pre> register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); } </pre> | <pre> define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc)); </pre> |
|------------------|---|---|

Although DataFu `StreamingQuantile` and `StreamingMedian` might appear to match Hive's `percentile_approx` function, Pig cannot consume `percentile_approx`.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 57: DataFu Functions with No Hive UDF Equivalent

| | | |
|----------------------------|-----------------------------|--------------------------------|
| AppendToBag (bags) | AssertUDF (util) | BagConcat (bags) |
| BagGroup (bags) | BagLeftOuterJoin (bags) | BagSplit (bags) |
| BoolToInt (util) | CountEach (bags) | DistinctBy (bags) |
| EmptyBagToNull (bags) | EmptyBagToNullFields (bags) | Enumerate (bags) |
| FirstTupleFromBag (bags) | HaversineDistInMiles (geo) | IntToBool (util) |
| MarkovPairs | NullToEmptyBag (bags) | PageRank (linkanalysis) |
| PrependToBag (bags) | ReservoirSample (sampling)* | ReverseEnumerate (bags) |
| SampleByKey (sampling)* | SessionCount (sessions) | Sessionize (sessions) |
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with `TABLESAMPLE` in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

The following changes are introduced in CDH 6.1

In CDH 6.1 Cloudera Search is rebased on Apache Solr 7.4.

Deprecations

- Enabling/disabling `autoAddReplicas` cluster-wide with the API is deprecated. Use `suspend/resume` trigger APIs with `name=".auto_add_replicas"` instead.
- In the `ReplicationHandler`, the `master.commitReserveDuration` sub-element is deprecated. Configure a direct `commitReserveDuration` element instead for use in all modes (leader, follower, cloud).

Removals

- The old Leader-In-Recovery implementation (implemented in Solr 4.9) has been removed and replaced. Solr supports rolling upgrades from old 7.x versions of Solr to future 7.x releases until the last release of the 7.x major version. This means that to upgrade to Solr 8, you will have to be on Solr 7.3 or higher.
- The throttling mechanism used to limit the rate of processed autoscaling events has been removed. This deprecates the `actionThrottlePeriodSeconds` setting in the `set-properties` command of Autoscaling API. Use the `triggerCooldownPeriodSeconds` parameter to pause event processing.
- The `RunExecutableListener` event listener was removed for security reasons. If you want to listen to events caused by updates and commits, or you want to optimize, write your own listener as native Java class as part of a Solr plugin.

For more information see the [Apache Solr 7.4 Release Notes](#).

The following changes are introduced in CDH 6.0

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.
- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

Apache Sentry contains the following incompatible change in CDH 6.0.0:

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.
- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.

- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.
Since compile-time type-safety in Python and R is not a language feature, the concept of `Dataset` does not apply to these languages' APIs. Instead, `DataFrame` remains the primary programming abstraction.
- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

CDH 6.1.0 introduces no new incompatible changes for Apache Sqoop.

The following changes are introduced in CDH 6.0, and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0. Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a `CHAR` or `VARCHAR` column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to `true` to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPSWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with `hcatalog` jobs or when `hive import` with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile
format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with `--hcatalog-table <HIVE_VIEW>`

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the `--hcatalog-table` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table"
--hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using EscapeUtils. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySQL after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of `--input-null-string` and `--input-null-non-string` options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using `--direct` connector and a MySQL database

The MySQL direct connector does not support the `--null-string`, `--null-non-string`, `--input-null-string`, and `--input-null-non-string` options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

There are no incompatible changes in this release.

Timezone Names Unsupported in Impala in CDH 6.1.0

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|------------|------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |

| | |
|--|--------------------------------|
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |

| | |
|--|----------------------|
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |

| | |
|------------------------------|---------------------------|
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |

| | |
|--|------------------------------|
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |
| FJST | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |

| | |
|--------------------|-------------------|
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |

| | |
|-------------------------------|--------------------|
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |

| | |
|--------------------------------|----------------------|
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |

| | |
|----------------------------|----------------------|
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |

| | |
|---------------------------------|------------------------|
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |
| Srednekolymk Time | Asia/Srednekolymk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |

| | |
|---------------------|---------------------|
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |

| | |
|-------------------------------|--------------------|
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |

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|--------------------|--------------------|
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.1.0

The following sections describe the known issues in CDH 6.1.0, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-1000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.



Important: If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can workaround the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|----------------------------------|---|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.

5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
10. Click **Save Changes**.
11. Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.
10. Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|-----------------------|---|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | <code>JAVA_TOOL_OPTIONS=-Xss1280K</code> |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | <code>JAVA_TOOL_OPTIONS=-Xss1280K</code> |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

(1) Ensure that the kernel is up to date.

- **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
- **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
- **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

There are no notable known issues in this release of Apache Accumulo.

Apache Crunch Known Issues



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

Apache Flume Known Issues

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to false.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to Invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x
- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

HDFS**Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction**

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH
- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.
- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="  
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,  
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

HDFS Snapshot corruption

A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Products affected: HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0 - 6.2.1, 6.3.0, 6.3.1, 6.3.2

Users affected: Any clusters with HDFS Snapshots enabled

Impact: A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Standby NameNode detects the inconsistent snapshot data structure and shuts itself down. To recover from this situation, the fsimage must be repaired and put back into both NameNodes' fsimage directory for the Standby NameNode to start normally. The Active NameNode stays up. However no fsimage checkpoint is performed because the Standby NameNode is down.

This problem can also prevent snapshots from being deleted or files within snapshots being listed. The following is an example of a typical error:

```
hdfs dfs -deleteSnapshot /path snapshot_123
deleteSnapshot: java.lang.IllegalStateException
```

The recovery of the corrupt fsimage can result in the loss of snapshots.

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: Alternatively, avoid using snapshots. Cloudera BDR uses snapshots automatically when the relevant directories are snapshottable. Hence, we strongly recommend avoiding the upgrade to the affected releases if you are using BDR. For information and instructions, see [Enabling and Disabling HDFS Snapshots](#).

Addressed in release/refresh/patch: CDH 6.3.3

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-390: HDFS Snapshot corruption](#)

CVE-2018-1296 Permissive Apache Hadoop HDFS listXAttr Authorization Exposes Extended Attribute Key/Value Pairs

AHDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent.

Products affected: Apache HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0, 6.0.1, 6.1.0

Users affected: Users who store sensitive data in extended attributes, such as users of HDFS encryption.

Date/time of detection: December 12, 2017

Detected by: Rushabh Shah, Yahoo! Inc., Hadoop committer

Severity (Low/Medium/High): Medium

Impact: HDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent. This affects features that store sensitive data in extended attributes.

CVE: CVE-2018-1296

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: If a file contains sensitive data in extended attributes, users and admins need to change the permission to prevent others from listing the directory that contains the file.

Addressed in release/refresh/patch:

- CDH 5.15.2, 5.16.1
- CDH 6.1.1, 6.2.0

Clusters running CDH 5.16.1, 6.1.0, or 6.1.1 can lose some HDFS file permissions any time the Name Node is restarted

When a cluster is upgraded to 5.16.1, 6.1.0, or 6.1.1 roles with SELECT and/or INSERT privileges on an Impala database or table will have the REFRESH privilege added as part of the upgrade process. HDFS ACLs for roles with the REFRESH privilege get set with empty permissions whenever the Name Node is restarted. This can cause any jobs or queries run by users within affected roles to fail because they will no longer be able to access affected Impala database or tables.

Products Affected: HDFS and components that access files in HDFS

Affected Versions: CDH 5.16.1, 6.1.0, 6.1.1

Users Affected: Clusters with Impala and HDFS ACLs managed by Sentry upgrading from any release to CDH 5.16.1, 6.1.0, and 6.1.1.

Severity (Low/Medium/High): High

Root Cause and Impact: The new privilege REFRESH was introduced in CDH 5.16 and 6.1 and applies to Impala databases and tables. When a cluster is upgraded to 5.16.1, 6.1.0, or 6.1.1, roles with SELECT or INSERT privileges on an Impala database or table will have the REFRESH privilege added during the upgrade.

HDFS ACLs for roles with the REFRESH privilege get set with empty permissions whenever the Name Node is restarted. The Name Node is restarted during the upgrade.

For example if a group `appdev` is in role `appdev_role` and has SELECT access to the Impala table "project" the HDFS ACLs prior to the upgrade would look similar to:

```
group: appdev
      group: :r--
```

After the upgrade the HDFS ACLs will be set with no permissions and will look like this:

```
group: appdev
      group: :---
```

Any jobs or queries run by users within affected roles will fail because they will no longer be able to access affected Impala database or tables. This impacts any SQL client accessing the affected databases and tables. For example, if a Hive client is used to access a table created in Impala it will also fail. Jobs accessing the files directly through HDFS, e.g. via Spark, will also be impacted.

The HDFS ACLs will get reset whenever the Name Node is restarted.

Immediate action required: If possible, do not upgrade to releases CDH 5.16.1, 6.1.0, or 6.1.1 if Impala is used and Sentry manages HDFS ACLs within your environment. Subsequent CDH releases will resolve the problem with a product fix under [SENTRY-2490](#).

If an upgrade is being considered, reach out to your account team to discuss other possibilities, and to receive additional insight into future product release schedules.

If an upgrade must be executed, contact Cloudera Support indicating the upgrade plan and why an upgrade is being executed. Options are available to assist with the upgrade if necessary.

Addressed in release/refresh/patch: Patches for 5.16.1, 6.1.0 and 6.1.1 are available for major supported operating systems. Customers are encouraged to contact Cloudera Support for a patch. The patch should be applied immediately after upgrade to any of the affected versions.

The fix for this TSB will be included in 6.1.2, 6.2.0, 5.16.2, and 5.17.0.

OIV ReverseXML processor fails

The HDFS OIV ReverseXML processor fails if the XML file contains escaped characters.

Affected Versions: CDH 6.x

Apache Issue: [HDFS-12828](#)

Cannot move encrypted files to trash

With HDFS encryption enabled, you cannot move encrypted files or directories to the trash directory.

Workaround: To remove encrypted files/directories, use the following command with the `-skipTrash` flag specified to bypass trash.

```
rm -r -skipTrash /testdir
```

Affected Versions: All CDH versions

Apache Issue: [HADOOP-10902](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:
 - Install CDH using Cloudera Manager; *or*
 - Start the NFS gateway as root; *or*
 - [Start the NFS gateway without using packages](#); *or*
 - You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the `portmap`.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to 777 on `.snapshot` directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

Permissions for `dfs.namenode.name.dir` incorrectly set

Hadoop daemons should set permissions for the `dfs.namenode.name.dir` (or `dfs.name.dir`) directories to `drwx-----` (700), but in fact these permissions are set to the file-system default, usually `drwxr-xr-x` (755).

Workaround: Use `chmod` to set permissions to 700.

Affected Versions: All CDH versions

Apache Issue: [HDFS-2470](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
java.lang.NullPointerException at
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler
- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

NodeManager fails because of the changed default location of container executor binary

The default location of container-executor binary and .cfg files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`. Because of this change, if you did not have the mount options `-noexec` and `-nosuid` set on `/opt`, the NodeManager can fail to start up as these options are set on `/var`.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the `-noexec` and `-nosuid` mount options on `/var` or change the container-executor binary and .cdf path using the `CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR` environment variable.

The Standby Resource Manager redirects `/jmx` and `/metrics` requests to the Active Resource Manager.

When ResourceManager high availability is enabled the Standby Resource Manager redirects `/jmx` and `/metrics` requests to the Active Resource Manager. This causes the following issues in Cloudera Manager:

- If **Enable Kerberos Authentication for HTTP Web-Console** is disabled: Cloudera Manager shows statistics for the wrong server.
- If **Enable Kerberos Authentication for HTTP Web-Console** is enabled: connection from the agent to the standby fails with the `HTTPError: HTTP Error 401: Authentication required` error message. As a result, the health of the Standby Resource Manager will become bad.

Workaround: N/A

Affected Versions: CDH 6.0.x, CDH 6.1.0

Fixed Version: CDH 6.1.1

Cloudera Issue: CDH-76040

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, `Enable Fair Scheduler Continuous Scheduler` is turned off by default.

Workaround: Turn off `Enable Fair Scheduler Continuous Scheduling` in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on `Fair Scheduler Assign Multiple Tasks`.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated `mapred-site.xml` that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

Apache HBase Known Issues

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.
2. Find the **Enable Audit Collection** property and clear it.
3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x
- HDP 3.1.5

- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.
 - If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:
 - Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
 - At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x

- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for hbase-site.xml →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom hbase-site →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each RegionServer under the RegionServer/Server JMX metrics endpoint. When short circuit reads are not enabled, this metric will be zero. When short circuit reads are enabled and the data locality for this RegionServer is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Default limits for PressureAwareCompactionThroughputController are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP
- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4

- **Workaround:**

- Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
- An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

Data loss with restore snapshot

The restore snapshot command causes data loss when the target table was split or truncated after snapshot creation.

Products affected: HBase

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0
- CDH 6.3.0

User affected: Users relying on Restore Snapshot functionality.

Impact: Restored table could have missing data when split or truncate happened after snapshot creation.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not use Restore Snapshot. The same functionality can be achieved if the table is deleted and Clone Snapshot is used instead of restoring a table's state to the snapshot.

```
hbase> disable 'table'
hbase> drop 'table'
hbase> clone_snapshot 'snapshot_name', 'table'
hbase> enable 'table'
```

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-379: Data loss with restore snapshot](#)

CDH users must not use Apache HBase's OfflineMetaRepair tool

OfflineMetaRepair helps you to rebuild the HBase meta table from the underlying file system. This tool is often used to correct meta table corruption or loss. It is designed to work only with `hbase-1.x` (CDH 5.x). Users must not run the OfflineMetaRepair tool against CDH 6.x since it uses `hbase-2.x`. If a user runs OfflineMetaRepair tool in CDH 6.x, then it will break or corrupt the HBase meta table.

If you have already corrupted your meta table or you believe your meta table requires the use of something like the former OfflineMetaRepair tool, do not attempt any further changes, contact Cloudera Support.

Products affected: CDH

Releases affected:

- CDH 6.0.0, 6.0.1

- CDH 6.1.0, 6.1.1
- CDH 6.2.0
- CDH 6.3.0

User affected: Clusters with HBase installed.

Impact: Cluster becomes inoperable.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not run OfflineMetaRepair tool.

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-376: CDH users must not use Apache HBase's OfflineMetaRepair tool](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a DataNode can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different DataNodes, meaning that there will be one RegionServer per DataNode per HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

IntegrationTestReplication fails if replication does not finish before the verify phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

ExportSnapshot or DistCp operations may fail on the Amazon `s3a://` protocol

`ExportSnapshot` or `DistCp` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO later. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

Export to Azure Blob Storage (the `wasb://` or `wasbs://` protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController postOperation problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive/HCatalog/Hive on Spark Known Issues

This topic contains:

- [Hive Known Issues](#)
- [HCatalog Known Issues](#)
- [Hive on Spark Known Issues](#)

Hive Known Issues

BDR - Hive restore failing during import

When the table filter used during hive cloud restore is different from the table filter used to create the hive cloud backup, the import step fails with the table not found error. Currently it impacts only the cloud restore scenario.

Products affected: Cloudera Manager

Releases affected:

- Cloudera Manager 5.15, 5.16
- Cloudera Manager 6.1.x

- Cloudera Manager 6.2.x
- Cloudera Manager 6.3.x

Users affected: BDR, Hive cloud restore, where restore uses a subset of tables from the exported tables

Impact:

- Limited, the hive cloud restore all tables works properly.
- The hive cloud restore from the hive cloud backup created prior to Cloudera Manager 5.15 would work without any problem.
- No other BDR functionality is affected.

Immediate action required:

- **Workaround:** Not available. Importing specific tables would fail. Importing ALL tables would continue to work properly.
- **Upgrade:** Upgrade to a Cloudera Manager version containing the fix.

Addressed in release/refresh/patch: Cloudera Manager 7.0 and higher versions

Query with an empty WHERE clause problematic if vectorization is off

Specific WHERE clauses cause problems if vectorization is off. For example,

```
SELECT COUNT (DISTINCT cint) FROM alltypesorc WHERE cstring1;  
SELECT 1 WHERE 1;
```

If vectorization is turned on and no rules turn off the vectorization, queries run as expected.

Workaround: Rewrite queries with casts or equals.

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-15408](#)

Cloudera Issue: CDH-81649

Query with DISTINCT can fail if vectorization is on

A query can fail when vectorization is turned on, the query contains DISTINCT, and other rules do not turn off the vectorization. A query-specific error message appears, for example:

```
Error: Error while compiling statement: FAILED: SemanticException  
org.apache.hadoop.hive.ql.metadata.HiveException: The column KEY._col2:0._col0 is not  
in the vectorization context column map {KEY._col0=0, KEY._col1=1, KEY._col2=2}.  
(state=42000,code=40000)
```

Workaround: Turn off vectorization for such queries as follows:

```
set hive.vectorized.execution.enabled=false;
```

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-19032](#)

Cloudera Issue: CDH-81341

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: Arithmetic exception [divide by] 0. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the `SELECT` clause on large values in columns with the data type of `BIGINT` might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are `BIGINT` data types in the `SELECT` clause of the query, incorrect results might be returned. Comparison operators include `==`, `!=`, `<`, `<=`, `>`, and `>=`. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference of values in such columns is out of range for a `LONG` (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 - (-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a `LONG` (64-bit) data type can hold.

Workaround: Use a `DECIMAL` type instead of `BIGINT` for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the `ORDER BY` clause is not supported for `SELECT *` queries

When column positions are specified in `ORDER BY` clauses, they are not honored for `SELECT *` queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

`ALTER PARTITION ... SET LOCATION` does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use `ALTER PARTITION ... SET LOCATION` on S3 or between S3 and HDFS. The rest of the `ALTER PARTITION` commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Commands run against an Oracle-backed metastore might fail

Commands run against an Oracle-backed Metastore fail with error:

```
javax.jdo.JDODataStoreException Incompatible data type for column TBLS.VIEW_EXPANDED_TEXT
: was CLOB (datastore),
but type expected was LONGVARCHAR (metadata). Please check that the type in the datastore
and the type specified in the MetaData are consistent.
```

This error might occur if the metastore is run on top of an Oracle database with the configuration property `datanucleus.validateColumns` set to `true`.

Workaround: Set `datanucleus.validateColumns=false` in the `hive-site.xml` configuration file.

Affected Versions: All CDH versions

Cannot create archive partitions with external HAR (Hadoop Archive) tables

```
ALTER TABLE ... ARCHIVE PARTITION is not supported on external tables.
```

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types `Server` and `URI` are not supported in "`SHOW GRANT ROLE roleName on OBJECT objectName`" statements

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

Logging differences create Supportability Issues

In the event you need Apache Hive support from Cloudera, the availability of logs is critical. Some CDH releases do not enable `log4j2` logging for Hive by default. Because of this, logs are not generated. Furthermore, the specified CDH releases are not configured to remove old log files to make room for new ones. This can cause the new logs to be lost. When Hive logs are missing, Support cannot troubleshoot Hive problems efficiently.

Components affected: Hive

Products affected: Hive

Releases affected:

- CDH 6.1
- CDH 6.2
- CDH 6.3

Users affected: Hive users

Severity: Medium

Impact: The absence of Hive log files causes delays in troubleshooting Hive problems.

Action required: Manually configure `log4j2` logging, and delete old log files to make room for new ones.

1. Open Cloudera Manager.
2. Select **Clusters > HIVE**.
3. Click the **Configuration** tab.
4. In the Search field, enter Hive Metastore Server Logging Advanced Configuration Snippet (Safety Valve).

5. Add the following XML to the field (or switch to Editor mode, and enter each property and its value in the fields provided).

```
<property>
  <name>rootLogger.appenderRefs</name>
  <value>root, console, DRFA, PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.name</name>
  <value>org.apache.hadoop.hive ql.log.PerfLogger</value>
</property>
<property>
  <name>logger.PerfLogger.level</name>
  <value>DEBUG</value>
</property>
<property>
  <name>appender.DRFA.filePattern</name>
  <value>${log.dir}/${log.file}.%i</value>
</property>
<property>
  <name>appender.DRFA.strategy.fileIndex</name>
  <value>min</value>
</property>
```

6. In the Search field, enter HiveServer2 Logging Advanced Configuration Snippet (Safety Valve).

7. Add the XML properties from step 5.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-384: Logging differences in CDH 6 create Supportability Issues](#)

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

Hive on Spark (HoS) Known Issues

A query fails with `IllegalArgumentException` Size requested for unknown type: `java.util.Collection`

An example of a query that fails due to this issue is:

```
WITH t2 AS
(SELECT array(1,2) AS c1
UNION ALL SELECT array(2,3) AS c1)
SELECT collect_list(c1)
FROM t2
```

Workaround: Create a table to store the array data.

Affected Versions: 6.3.x, 6.2.x, 6.1.x

Cloudera Issue: CDH-80169

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form "client.RpcRetryingCaller: Call exception...", then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hue Known Issues

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - *The Add Description* field in the Table schema browser does not sanitize user inputs as expected.
- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower
- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower
- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

Hue Silently Disables StartTLS in LDAP Connections

There are two mechanisms to secure communication to an LDAP server. One is to use an 'ldaps' connection, where all traffic is encrypted inside a TLS tunnel - much like 'https'. The other is to use 'StartTLS', where traffic begins unencrypted in the "ldap" protocol and then upgrades itself to a TLS connection.

If StartTLS is enabled in the Hue configuration but the 'ldap_cert' parameter is not configured, then Hue silently disables StartTLS.

StartTLS will not be used for synchronization or import, even if StartTLS is enabled and the 'ldap_cert' parameter is set.

The result is that connections that the administrator assumes to be secured, using StartTLS, are not actually secure.

CVE: CVE-2019-19146

Date/time of detection: 22nd March, 2019

Detected by: Ben Gooley, Cloudera

Severity (Low/Medium/High): 8.8 High [CVSS AV:N/AC:L/PR:N/UI:R/S:U/C:H/I:H/A:H](#)

Products affected: CDH

Releases affected:

- CDH 5.x
- CDH 6.1.0
- CDH 6.1.1
- CDH 6.2.0
- CDH 6.2.1
- CDH 6.3.0

Users affected: All users who are using StartTLS enabled in the Hue configuration when using LDAP as Authentication Backend to login in Hue.

Impact: Sensitive data exposure.

Immediate action required:

- **Upgrade (recommended):** Update to a version of CDH containing the fix.
- **Workaround:** Use “ldaps” instead of “ldap” and StartTLS.

Addressed in release/refresh/patch: CDH 6.3.1 and above

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-371: Hue Silently Disables StartTLS in LDAP Connections](#)

Hue allows unsigned SAML assertions

If Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

Products affected: Hue, CDH

Releases affected:

- CDH 5.15.x and earlier
- CDH 5.16.0, 5.16.1
- CDH 6.0.x
- CDH 6.1.x

User affected: All users who are using SAML with Hue.

CVE: CVE-2019-14775

Date/time of detection: January 2019

Detected by: Joel Snape

Severity (Low/Medium/High): High

Impact:

This is a significant security risk as it allows anyone to fake their access validity and therefore access Hue, even if they should not have access. In more detail: if Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

CVE: CVE-2019-14775

Immediate action required:

- **Upgrade (recommended):** Upgrade to a version of CDH containing the fix.
- **Workaround:** None

Addressed in release/refresh/patch:

- CDH 5.16.2
- CDH 6.2.0

Hue external users granted super user privileges in C6

When using either the `LdapBackend` or the `SAML2Backend` authentication backends in Hue, users that are created on login when logging in for the first time are granted superuser privileges in CDH 6. This does not apply to users that are created through the User Admin application in Hue.

Products affected: Hue

Releases affected: CDH 6.0.0, CDH 6.0.1, CDH 6.1.0

Users affected: All user

Date/time of detection: Dec/12/18

Severity (Low/Medium/High): Medium

Impact:

The superuser privilege is granted to any user that logs in to Hue when LDAP or SAML authentication is used. For example, if you have the `create_users_on_login` property set to true in the **Hue Service Advanced Configuration Snippet (Safety Valve) for `hue_safety_valve.ini`**, and you are using LDAP or SAML authentication, a user that logs in to Hue for the first time is created with superuser privileges and can perform the following actions:

When the `SAML2Backend` is used, Hue accounts that have superuser privileges can:

- Create/Delete users and groups
- Assign users to groups
- Alter group permissions

However, when the `SAML2Backend` is used, users can only log in to Hue using SAML authentication.

When the `LdapBackend` is used, Hue accounts that have superuser privileges can:

- Synchronize Hue users with your LDAP server
- Create local users and groups (these local users can login to Hue only if the mode of multi-backend authentication is set up as `LdapBackend` and `AllowFirstUserDjangoBackend`)
- Assign users to groups
- Alter group permissions

This impact *does not* apply to the following other scenarios:

- When users are synced with your LDAP server manually by using the User Admin page in Hue.
- When you are using other authentication methods. For example:
 - `AllowFirstUserDjangoBackend`
 - Spnego
 - PAM
 - Oauth

When the `LdapBackend` and `AllowFirstUserDjangoBackend` are used, administrators should note:

- Local users, including users created by unexpected superusers, can login through `AllowFirstUserDjangoBackend`.
- Local users in Hue that created as hive, hdfs, or solr have privileges to access protected data and alter permissions in security app.

- Removing the `AllowFirstUserDjangoBackend` authentication backend can stop local users login to Hue, but it requires the administrator to have Cloudera Manager access



Note: Regardless of the authentication backend in use, the Hue superuser cannot perform the following tasks:

- Make any changes related to Sentry if the user has not been granted any privileges in Sentry. The Hue superuser can only view the Security app in the Hue UI.
- Change the authentication backends. This task requires access to Cloudera Manager.

CVE: CVE-2019-7319

Immediate action required: Upgrade and follow the instructions below.

Addressed in release/refresh/patch: CDH 6.1.1 and CDH 6.2.0

After upgrading to 6.1.1 or later, you must run the following update statement in the Hue database:

```
UPDATE useradmin_userprofile SET `creation_method` = 'EXTERNAL' WHERE `creation_method` = 'CreationMethod.EXTERNAL';
```



Important: If the Hue database is using MySQL, before you run this UPDATE statement, check if safe mode is on by using the following query:

```
SELECT @@SQL_SAFE_UPDATES;
```

If the safe mode is turned on, it returns '1'. You can temporarily set it to off by using the following SET statement:

```
SET SQL_SAFE_UPDATES = 0;
```

After running the update statement, to re-enable safe mode:

```
SET SQL_SAFE_UPDATES = 1;
```

After executing the UPDATE statement, new Hue users are no longer automatically created as superusers.

To find out the list of superusers, run SQL query:

```
SELECT username FROM auth_user WHERE superuser = 1;
```

Users who obtained superuser privilege due to this issue need to be revoked manually by using the following steps:

1. Log in to the Hue UI as an administrator.
2. In the upper right corner of the page, click the user drop-down list and select **Manage User**:
3. In the User Admin page, make sure that the **Users** tab is selected and click the name of the user in the list that you want to edit:
4. In the Hue Users - Edit user page, click **Step 3: Advanced**:
5. Clear the checkbox for **Superuser status**:
6. At the bottom of the page, click **Update user** to save the change.

For the latest update on this issue see the corresponding Knowledge article:

[TSB 2019-360: Hue external users granted super user privileges in C6](#)

Hue does not support the Spark App

Hue does not currently support the Spark application.

Logs are not updating in `/var/log/hue` after upgrading to CDH 6

After upgrading to CDH 6 if you check the logs in `/var/log/hue` and note that they are not being updated, this means that the alternatives link was lost during the upgrade.

Workaround: To resolve this issue, open a terminal window and perform the following on every Hue server:

For RHEL/Centos:

```
/usr/sbin/alternatives --install /etc/hue/conf hue-conf
/opt/cloudera/parcels/CDH/etc/hue/conf.empty 10
```

For SLES:

```
/usr/sbin/update-alternatives --install /etc/hue/conf hue-conf
/opt/cloudera/parcels/CDH/etc/hue/conf.empty 10
```

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname` only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using Thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \{(string)\} [=:].*` And the replacement could be for example: `secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

Products affected:

- CDP Private Cloud Base
- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: [CVE-2021-28131](#)

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Authenticated user with access to active session or query id can hijack other Impala session or query

If an authenticated Impala user supplies a valid query id to Impala's HS2 and Beeswax interfaces, they can perform operations on other sessions or queries when normally they do not have privileges to do so.

Releases affected:

- CDH 5.16.x and lower
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0

Users affected: All Impala users of affected versions.

Date/time of detection: 21st May 2019

Severity (Low/Medium/High): 7.5 (High) ([CVSS 3.0: AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:N/A:N](#))

Impact: Neither the original issue or the fix affect the normal use of the system.

CVE: CVE-2019-10084

Immediate action required: There is no workaround, upgrade to a version of CDH containing the fix.

Addressed in release/refresh/patch: CDH 6.2.1 and higher versions

XSS Cloudera Manager

Malicious Impala queries can result in Cross Site Scripting (XSS) when viewed in Cloudera Manager.

Products affected: Apache Impala

Releases affected:

- Cloudera Manager 5.13.x, 5.14.x, 5.15.1, 5.15.2, 5.16.1
- Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Users affected: All Cloudera Manager Users

Date/time of detection: November 2018

Severity (Low/Medium/High): High

Impact: When a malicious user generates a piece of JavaScript in the impala-shell and then goes to the Queries tab of the Impala service in Cloudera Manager, that piece of JavaScript code gets evaluated, resulting in an XSS.

CVE: CVE-2019-14449

Immediate action required: There is no workaround, upgrade to the latest available maintenance release.

Addressed in release/refresh/patch:

- Cloudera Manager 5.16.2
- Cloudera Manager 6.0.2, 6.1.1, 6.2.0, 6.3.0

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

System-wide auth-to-local mapping not applied correctly to Kudu service account

Due to system `auth_to_local` mapping, the principal may be mapped to some local name.

When running with Kerberos enabled, you may hit the following error message where `<random-string>` is some random string which doesn't match the primary in the Kerberos principal.

```
WARNINGS: TransmitData() to X.X.X.X:27000 failed: Remote error: Not authorized:
{username='<random-string>', principal='impala/redacted'} is not allowed to access
DataStreamService
```

Workaround: Start Impala with the `--use_system_auth_to_local=false` flag to ignore the system-wide `auth_to_local` mappings configured in `/etc/krb5.conf`.

Affected Versions: CDH 5.15, CDH 6.1 and higher

Apache Issue: KUDU-2198

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate
section memory!
terminate called after throwing an instance of
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>
>'
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max
echo 2000000 > /proc/sys/kernel/pid_max
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)**Breakpad minidumps can be very large when the thread count is high**

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the `impalad` daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Timestamp type-casted to varchar in a binary predicate can produce incorrect result

In an Impala query the timestamp can be type-casted to a varchar of smaller length to convert a timestamp value to a date string. However, if such Impala query is used in a binary comparison against a string literal, it can produce incorrect results, because of a bug in the expression rewriting code. The following is an example of this:

```
> select * from (select cast('2018-12-11 09:59:37' as timestamp) as ts) tbl where cast(ts
as varchar(10)) = '2018-12-11';
```

The output will have 0 rows.

Affected version:

- CDH 5.15.0, 5.15.1, 5.15.2, 5.16.0, 5.16.1
- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed versions:

- CDH 5.16.2
- CDH 6.2.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-358: Timestamp type-casted to varchar in a binary predicate can produce incorrect result](#)

Incorrect result due to constant evaluation in query with outer join

An `OUTER JOIN` query could omit some expected result rows due to a constant such as `FALSE` in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
  INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
  RIGHT JOIN alltypes a3 ON a1.year = a1.bigint_col;
+-----+
| Explain String |
+-----+
| Estimated Per-Host Requirements: Memory=1.00KB VCores=1 |
| 00:EMPTYSET |
+-----+
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a `LIKE` operator is an escaped `\%` character, it does not match a `%` final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: impala::Coordinator::ValidateCollectionSlots

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Metadata

These issues affect how Impala interacts with metadata. They cover areas such as the metastore database and the Impala Catalog Server daemon.

Concurrent catalog operations with heavy DDL workloads can cause queries with SYNC_DDL to fail fast

When Catalog Server is under a heavy load with concurrent catalog operations of long running DDLs, queries running with the `SYNC_DDL` query option can fail with the following message:

```
ERROR: CatalogException: Couldn't retrieve the catalog topic
version for the SYNC_DDL operation after 3 attempts.The operation has
been successfully executed but its effects may have not been
broadcast to all the coordinators.
```

The catalog operation is actually successful as the change has been committed to HMS and Catalog Server cache, but when Catalog Server notices a longer than expected time for it to broadcast the changes, it fails fast.

The coordinator daemons eventually sync up in the background.

Affected Versions: CDH versions 6.0 and 6.1

Apache Issue: [IMPALA-7961](#) / CDH-76345

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Configuration needed for Flume to be compatible with Impala

For compatibility with Impala, the value for the Flume HDFS Sink `hdfs.writeFormat` must be set to `Text`, rather than its default value of `Writable`. The `hdfs.writeFormat` setting must be changed to `Text` before creating data files with Flume; otherwise, those files cannot be read by either Impala or Hive.

Resolution: This information has been requested to be added to the upstream Flume documentation.

Affected Versions: All CDH 6 versions

Cloudera Issue: CDH-13199

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null", "string"]` instead of `["string", "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Set limits on size of expression trees

Very deeply nested expressions within queries can exceed internal Impala limits, leading to excessive memory usage.

Workaround: Avoid queries with extremely large expression trees. Setting the query option `disable_codegen=true` may reduce the impact, at a cost of longer query runtime.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4551](#)

Impala does not support running on clusters with federated namespaces

Impala does not support running on clusters with federated namespaces. The `impalad` process will not start on a node running such a filesystem based on the `org.apache.hadoop.fs.viewfs.ViewFs` class.

Workaround: Use standard HDFS on all Impala nodes.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-77](#)

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for `impalad_flags`** to specify the load balancer address with the HiveServer2 port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

Unable to Correctly Parse the Terabyte Unit

Impala does not support parsing strings that contain "TB" when used as a unit for terabytes. The flags related to memory limits may be affected, such as the flags for scratch space and data cache.

Workaround: Use other supported units to specify values, e.g. GB or MB.

Affected Versions: CDH 6.3.x and lower versions

Fixed Versions: CDH 6.4.0

Apache Issue: [IMPALA-8829](#)

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

Casting scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala Parser issue when using fully qualified table names that start with a number

A fully qualified table name starting with a number could cause a parsing error. In a name such as `db.571_market`, the decimal point followed by digits is interpreted as a floating-point number.

Workaround: Surround each part of the fully qualified name with backticks (```).

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.2.0

Apache Issue: [IMPALA-941](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: All CDH 6 versions

Apache Kafka Known Issues

Potential to bypass transaction and idempotent ACL checks in Apache Kafka

It is possible to manually craft a Produce request which bypasses transaction and idempotent ACL validation. Only authenticated clients with Write permission on the respective topics are able to exploit this vulnerability.

Products affected:

- CDH
- CDK Powered by Apache Kafka

Releases affected:

- CDH versions 6.0.x, 6.1.x, 6.2.0
- CDK versions 3.0.x, 3.1.x, 4.0.x

Users affected: All users who run Kafka in CDH and CDK.

Date/time of detection: September, 2018

Severity (Low/Medium/High): 7.1 (High) ([CVSS:3.0/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:H/A:H](#))

Impact: Attackers can exploit this issue to bypass certain security restrictions to perform unauthorized actions. This can aid in further attacks.

CVE: CVE-2018-17196

Immediate action required: Update to a version of CDH containing the fix.

Addressed in release/refresh/patch:

- CDH 6.2.1, 6.3.2
- CDK 4.1.0

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-378: Potential to bypass transaction and idempotent ACL checks in Apache Kafka](#)

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to true.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: KAFKA-2561

Cloudera Issue: None

Kafka Broker Fails to Start Due to Slow Sentry and HMS startup

This issue is encountered on cluster startup and is caused by misalignment between Kafka, Sentry, and HMS. The slow startup of HMS slows down Sentry startup which consequently makes the Kafka connection to Sentry time out. Ultimately, the Kafka broker will be unable to start.

Workaround: Manually increase the number of remote procedure call retries between Sentry and Kafka through the **Sentry Client Advanced Configuration Snippet (Safety Valve) for `sentry-site.xml`** property.

1. Go to **Sentry > Configuration** and find the **Sentry Client Advanced Configuration Snippet (Safety Valve) for `sentry-site.xml`** property.
2. Click on the add button.
3. Enter the following data:
 - Name: `sentry.service.client.rpc.retry-total`
 - Value: 20
4. Enter a **Reason for change**, and then click **Save Changes** to commit the changes.
5. Return to the Home page by clicking the Cloudera Manager logo.
6. Click the restart stale services icon next to the Sentry service to invoke the cluster restart wizard.
7. Click **Restart Stale Services**.
8. Click **Restart Now**.
9. Click **Finish**.

Affected Versions: CDH 6.1.0 and higher

Fixed Versions: N/A

Cloudera Issue: CDH-74713

Kafka JMX Tool Cannot Connect to JMX

The Kafka JMX tool cannot connect to the JMX agent of the Kafka Broker or MirrorMaker if the specified address of the JMX remote connector is bound to 127.0.0.1.

Workaround:

1. In Cloudera Manager go to **Kafka > Instances** and select the affected broker.
2. Find the **Additional Broker Java Options** and **Additional MirrorMaker Java Options** properties and add the following Java option to the configuration:

```
-Djava.rmi.server.hostname=127.0.0.1
```



Note: Configuring the **Additional MirrorMaker Java Options** property is only required if you are using JMX with MirrorMaker.

3. Restart the affected brokers.

Affected Versions: CDH 6.0.0 and higher

Fixed Versions: CDH 6.2.0

Cloudera Issue: OPSAPS-48695

The Idempotent and Transactional Capabilities of Kafka are Incompatible with Sentry

The idempotent and transactional capabilities of Kafka are not compatible with Sentry. The issue is due to Sentry being unable to handle authorization policies for Kafka transactions. As a result, users cannot use Kafka transaction in combination with Sentry.

Workaround: Use the Sentry super user in applications where idempotent producing is a requirement or disable Sentry.

Affected Versions: CDK 4.0 and later, CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.3.0

Fixed Versions: CDH 6.2.1, 6.3.1

Apache Issue: N/A

Cloudera Issue: CDH-80606

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions: All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

Apache Kudu Known Issues

The following are known bugs and issues in Kudu. Note that this list is not exhaustive, and is meant to communicate only the most important known issues.

Kudu Masters unable to join back after a restart

In a multi master Kudu environment, if a master is restarted or goes offline for a few minutes, it can occasionally have trouble joining the cluster on startup. For example, if this happens in case of three kudu masters, and one of the other two masters is stopped or dies during this time, then the overall Kudu cluster is down because the majority of the masters are not running.

This issue is resolved by the [KUDU-2748](#) upstream JIRA.

Products affected: Apache Kudu

Affected version:

- CDH 5.14.0, 5.14.2, 5.14.4
- CDH 5.15.0, 5.15.1, 5.15.2
- CDH 5.16.1, 5.16.2
- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0, 6.2.1

Fixed version:

- CDH 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-442: Kudu Masters unable to join back after a restart](#)

Inconsistent rows returned from queries in Kudu

Due to KUDU-2463, upon restarting Kudu, inconsistent rows may be returned from tables that have not recently been written to, resulting in any of the following:

- multiple rows for the same key being returned
- deleted data being returned
- inconsistent results consistently being returned for the same query

If this happens, you have two options to resolve the conflicts: write to the affected Kudu partitions by:

- re-deleting the known and deleted data
- upserting the most up-to-date version of affected rows.

Products affected: Apache Kudu

Affected version:

- CDH 5.12.2, 5.13.3, 5.14.4, 5.15.1, 5.16.1
- CDH 6.0.1, 6.1.0, 6.1.1

Fixed version:

- CDH 5.16.2
- CDH 6.2.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-353: Inconsistent rows returned from queries in Kudu](#)

C++ Client Fails to Re-acquire Authentication Token in Multi-master Clusters

A security-related issue can cause Impala queries to start failing on busy clusters in the following scenario:

- The cluster runs with the `--rpc_authentication` set as `optional` or `required`. The default is `optional`. Secure clusters use `required`.
- The cluster is using multiple masters.
- Impala queries happen frequently enough that the leader master connection to some `impalad` isn't idle-closed (more than 1 query per 65 seconds).
- The connection stays alive for longer than the authentication token timeout (1 week by default).
- A master leadership change occurs after the authentication token expiration.

Impala queries will start failing with errors in the `impalad` logs like:

```
I0904 13:53:08.748968 95857 client-internal.cc:283] Unable to determine the new leader
Master: Not authorized: Client connection negotiation failed: client connection to
10.164.44.13:7051: FATAL_INVALID_AUTHENTICATION_TOKEN: Not authorized: authentication
token expired
I0904 13:53:10.389009 95861 status.cc:125] Unable to open Kudu table: Timed out:
GetTableSchema timed out after deadline expired
@ 0x95b1e9 impala::Status::Status()
@ 0xff22d4 impala::KuduScanNodeBase::Open()
@ 0xff101e impala::KuduScanNode::Open()
@ 0xb73ced impala::FragmentInstanceState::Open()
@ 0xb7532b impala::FragmentInstanceState::Exec()
@ 0xb64ae8 impala::QueryState::ExecFInstance()
@ 0xd15193 impala::Thread::SuperviseThread()
@ 0xd158d4 boost::detail::thread_data<>::run()
@ 0x129188a (unknown)
@ 0x7f717ceade25 start_thread
@ 0x7f717cbdb34d __clone
```

Impala shell queries will fail with a message like:

```
Unable to open Kudu table: Timed out: GetTableSchema timed out after deadline expired
```

Workaround:

- Restart the affected Impala Daemons. Restarting a daemon ensures the problem will not reoccur for at least the authentication token lifetime, which defaults to one week.
- Increase the authentication token lifetime (`--authn_token_validity_seconds`). Beware that raising this lifetime increases the window of vulnerability of the cluster if a client is compromised. It is recommended that you keep the token lifetime at one month maximum for a secure cluster. For unsecured clusters, a longer token lifetime is acceptable, and a 3 month lifetime is recommended.

Affected Versions: From CDH 5.11 through CDH 6.0.1

Apache Issue: [KUDU-2580](#)

Timeout Possible with Log Force Synchronization Option

If the Kudu master is configured with the `-log_force_fsync_all` option, tablet servers and clients will experience frequent timeouts, and the cluster may become unusable.

Affected Versions: All CDH 6 versions

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider

this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Fault Tolerant Scan Memory Issue

Unlike regular scans, fault tolerant scans will allocate all required memory when the scan begins rather than as it progresses. This can be significant for big tablets. Moreover, this memory usage isn't counted towards the tablet server's overall memory limit, raising the likelihood of the tablet server being out-of-memory killed by the kernel.

Affected Versions: CDH 6.2 / Kudu 1.9 and lower

Apache Issue: [KUDU-2466](#)

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used due to a sys table change in PostgreSQL from version 9.5 to 9.6. The failure only happens if Oozie uses a JDBC driver earlier than 9.4.1209.

Workaround:

1. After the parcels of the new version are distributed, replace the PostgreSQL JDBC driver with a newer one (version 9.4.1209 or higher) in the new parcel, at the following locations:

- /opt/cloudera/parcels/\${newparcel.version}/lib/oozie/lib/
- /opt/cloudera/parcels/\${newparcel.version}/lib/oozie/libtools/

2. Perform the upgrade.



Note: If you already started the upgrade and the process stops with an error message about missing columns, you can change the drivers at that point of the process as well, and resume the upgrade.

If your cluster is installed from packages, you must change the drivers at the following locations:

- /usr/lib/oozie/libtools/
- /usr/lib/oozie/lib/



Note: You can change the driver after the packages installation, but before running the CDH upgrade wizard. You can also do it during the update process, when the error occurs.

You can download the driver from the [PostgreSQL JDBC driver homepage](#).

Affected Versions: CDH 6.0.0 and higher

Fixed Version: CDH 6.2.1 and higher

Cloudera Issue: CDH-75951

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in Parquet.

Apache Pig Known Issues

There are no known issues in this release.

Cloudera Search Known Issues

The current release includes the following known limitations:

Default Solr core names cannot be changed (limitation)

Although it is technically possible to give user-defined Solr core names during core creation, it is to be avoided in the context of Cloudera Search. Cloudera Manager expects core names in the default "collection_shardX_replicaY" format. Altering core names results in Cloudera Manager being unable to fetch Solr metrics for the given core and this, eventually, may corrupt data collection for co-located core, or even shard and server level charts.

Processing UpdateRequest with delegation token throws NullPointerException

When using the Spark Crunch Indexer or another client application which utilizes the SolrJ API to send Solr Update requests with delegation token authentication, the server side processing of the request might fail with a NullPointerException.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Apache Issue: SOLR-13921

Cloudera Issue: CDH-82599

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

HBase Lily indexer might fail to write role log files

In certain scenarios the HBase Lily Indexer (Key-Value Store Indexer) fails to write its role log files.

Workaround: None

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82342

Adding a new indexer instance to HBase Lily Indexer fails with GSSException

When Kerberos authentication is enabled and adding a new indexer instance to HBase Lily Indexer (Key-Value Store Indexer), the authentication might fail when Lily is communicating to the HBase Master process, throwing a similar Exception:

```
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid credentials provided (Mechanism level: Failed to find any Kerberos tgt)]
```

Workaround: Ensure that the Lily indexer has a Sentry dependency configured by following these steps:

1. Go to **Cloudera Manager > Key-Value Store indexer > Configuration**.
2. Make sure the **Sentry Service** configuration option points to a Sentry service instance instead of **none**.

The workaround does not require defining any Sentry roles or privileges, it is just to trigger a code execution path which will authenticate the HBase service user.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82566

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with CrunchIndexerTool, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the MapReduceIndexerTool nor the HBaseMapReduceIndexerTool

The MapReduceIndexerTool and the HBaseMapReduceIndexerTool can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the MapReduceIndexerTool or HBaseMapReduceIndexerTool. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the “Browse” and “Spell” Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irreversibly corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool` multiple times may produce duplicate entries in a collection.

Repeatedly running the `MapReduceIndexerTool` on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the `HBaseMapReduceIndexerTool` unless it is run with more than zero reducers.

Workaround: To avoid this issue, use `HBaseMapReduceIndexerTool` with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139

Apache Sentry Known Issues

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

When granting privileges, a single transaction per grant causes long delays

Sentry takes a long time to grant or revoke a large number of column-level privileges that are requested in a single statement. For example if you execute the following command:

```
GRANT SELECT(col1, col2, ...) ON TABLE table1;
```

Sentry applies the grants to each column separately and the refresh process causes long delays.

Workaround: Split the grant statement up into smaller chunks. This prevents the refresh process from causing delays.

Affected Versions:

- CDH: 5.14.4
- CDH: 5.15.1
- CDH: 5.16.0
- CDH: 6.1.0

Fixed Versions:

- CDH 5.16.1 and above
- CDH 6.2.0 and above

Cloudera Issue: CDH-74982

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.

Affected Versions:

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694**GRANT/REVOKE operations could fail if there are too many concurrent requests**

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.

Affected Versions: CDH 5.13.0 and above**Apache Issue:** [SENTRY-1855](#)**Cloudera Issue:** CDH-56553**Creating large set of Sentry roles results in performance problems**

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.

Affected Versions: CDH 5.13.0 and above**Cloudera Issue:** CDH-59010**Users can't track jobs with Hive and Sentry**

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above**Cloudera Issue:** CDH-22890

Column-level privileges are not supported on Hive Metastore views

GRANT and REVOKE for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

SELECT privilege on all columns does not equate to SELECT privilege on table

Users who have been explicitly granted the SELECT privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as SELECT COUNT (1) or SELECT COUNT (*) will not work even if you have the SELECT privilege on all columns.

There is one exception to this. The SELECT * FROM TABLE command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The EXPLAIN SELECT operation works without table or column-level privileges

Users are able to run the EXPLAIN SELECT operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types Server and URI are not supported in SHOW GRANT ROLE roleName on OBJECT objectName

Workaround: Use SHOW GRANT ROLE roleName to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|--------------------------|---------------------------------|
| hdfs://absolute/path/ | hdfs://relative/path |
| s3a://bucketname/ | s3a://bucketname |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6.1.x. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

Shuffle+Repartition on a DataFrame could lead to incorrect answers

When a repartition follows a shuffle, the assignment of rows to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input rows than the original computation. As a result, some rows can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2
- CDS 2.2.0 release 1, release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-3: Shuffle+Repartition on a DataFrame could lead to incorrect answers](#)

Shuffle+Repartition on an RDD could lead to incorrect answers

When a repartition follows a shuffle, the assignment of records to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input records than the original computation. As a result, some records can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2, release 3
- CDS 2.2.0 release 1, release 2, release 3
- CDS 2.3.0 release 1, release 2, release 3

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 4
- CDS 2.2.0 release 4
- CDS 2.3.0 release 4

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-4: Shuffle+Repartition on an RDD could lead to incorrect answers](#)

RDD.repartition() has different failure handling in Spark 2.4 and may cause job failures

The `RDD.repartition()` transformation, which reshuffles data in the RDD randomly to create either more or fewer partitions and then balances it across the partitions, was using a round-robin method to distribute data that caused incorrect answers to be returned for RDD jobs. This issue has been corrected, but it introduced a behavior change in RDD job failure handling. Now, Spark actively fails a job if there is a fetch failure that was caused by a node failure after repartitioning.

Workaround: Use the `RDD.checkpoint()` method to save the intermediate RDD data to HDFS. First, call `SparkContext.setCheckpointDir(directory: String)` to set the checkpoint directory where the intermediate data will be saved. Note that the directory must be an HDFS path. Then mark the RDD for checkpointing by calling `RDD.checkpoint()` when you use the `RDD.repartition()` transformation.

Apache Issue: [SPARK-23243](#)

Cloudera Issue: CDH-76413

Spark Streaming write-ahead logs do not run on HDFS directories with Erasure Coding enabled

Spark Streaming write-ahead logs (WALs) cannot run on HDFS directories when Erasure Coding is enabled. Erasure Coding does not support `hflush()`, `hsync()`, and `append()`, which prevents the WALs from running.

Workaround: Configure Spark Streaming with a checkpoint directory that does not have Erasure Coding enabled on it. You can set the checkpoint directory with `ssc.checkpoint("directory_name")`. For example:

```
ssc.checkpoint("_checkpoint")
```

Affected Versions: CDH 6.1.0

Fixed Versions: CDH 6.2.0

Apache Issue: [SPARK-26094](#)

Cloudera Issue: CDH-61127

PySpark broadcast variables fail when disk encryption is enabled

When disk encryption is enabled, PySpark broadcast variables fail with the following stack trace:

```
Traceback (most recent call last): File "broadcast.py", line 37, in <module>
words_new.value File "/pyspark.zip/pyspark/broadcast.py", line 137, in value
File "pyspark.zip/pyspark/broadcast.py", line 122, in load_from_path File
"/pyspark.zip/pyspark/broadcast.py", line 128, in load EOFError: Ran out of input
```

Workaround: None

Affected Versions: CDH 6.0.1, CDH 6.1.0

Fixed Versions: CDH 6.1.1, CDH 6.2.0

Apache Issue: [SPARK-26201](#)

Cloudera Issue: CDH-76055

Structured Streaming exactly-once fault tolerance constraints

In Spark Structured Streaming, the exactly-once fault tolerance for `file sink` is valid only for files that are in the manifest. These files are located in the `_spark_metadata` subdirectory of the `file sink` output directory. Only process files that have file names starting with digits. Other temporary files can also appear in this directory, but they should not be processed. Typically, these temporary file names start with a period (".").

You can list the valid manifest files, excluding the temporary files, by using a command like the following, which assumes your output directory is located at `/tmp/output`. As the appropriate user, run the following command to list the valid manifest files:

```
hadoop fs -ls /tmp/output/_spark_metadata/[0-9]*
```

Workaround: None

Affected Versions: CDH 6.1.0 and higher

Cloudera Issue: CDH-75191

Spark SQL does not respect size limit for the varchar type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Spark SQL does not respect Sentry ACLs when communicating with Hive metastore

Even if user is configured via Sentry to not have read permission to a Hive table, a Spark SQL job running as that user can still read the table's metadata directly from the Hive metastore. **Cloudera Issue:** CDH-76468

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's `client` mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

Apache Sqoop Known Issues

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (doc import + `--as-parquetfile`) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (`sqoop import --as-parquetfile`) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \${CONDITIONS}" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/5dbcac42-5d69-4e46-88c2-17dbedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a `--target-dir` which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

There are no known issues in this release.

CDH 6.0.x Release Notes

To view release notes for specific CDH 6.0.x releases, see the following:

CDH 6.0.1 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for CDH 6.0.1:

What's New in CDH 6.0.1

This is a maintenance release that fixes some important issues. For details, see [Fixed Issues in CDH 6.0.1](#) on page 1127.

Fixed Issues in CDH 6.0.1

See below for issues fixed in CDH 6.0.1, grouped by component:

Apache Flume

The following issues are fixed in CDH 6.0.1:

- [FLUME-3237](#) - Handling RuntimeExceptions coming from the JMS provider in JMSSource

Apache Hadoop

The following issues are fixed in CDH 6.0.1:

- [HADOOP-13597](#) - Fixed an issue where the KMS consumes memory and increases File Descriptors.
- [HADOOP-15311](#) - You can now configure the acceptor/selector count for HttpServer2.
- [HADOOP-15473](#) - Fixed an UnrecoverableKeyException caused by JDK-8189997.
- [HADOOP-15593](#) - Fixed NPE in UGI spawnAutoRenewalThreadForUserCreds.
- [HADOOP-15609](#) - The KMS now retries when an SSLHandshakeException occurs.
- [HADOOP-15638](#) - The KMS Accept Queue Size default changed from 500 to 128 in Hadoop 3.x.
- [HADOOP-15655](#) - Enhance KMS client retry behavior to retry on timeout.
- [HADOOP-15696](#) - Fixed an issue where the KMS experiences performance regression due to too many open file descriptors after Jetty migration.
- [HADOOP-15698](#) - Fixed an issue where the KMS log4j is not initialized properly at startup.
- [HADOOP-15708](#) - Fixed an issue where reading values from Configuration before adding deprecations makes it impossible to read the values with a deprecated key.

HBase

The following issues are fixed in CDH 6.0.1:

- [HBASE-19572](#) - RegionMover should use the configured default port number and not the one from HConstants
- [HBASE-19722](#) - Meta query statistics metrics source
- [HBASE-19764](#) - Fix Checkstyle errors in hbase-endpoint
- [HBASE-20244](#) - NoSuchMethodException when retrieving private method decryptEncryptedDataEncryptionKey from DFSClient
- [HBASE-20401](#) - Make MAX_WAIT and waitIfNotFinished in CleanerContext configurable
- [HBASE-20403](#) - Fix race between prefetch task and non-pread HFile reads
- [HBASE-20474](#) - Show non-RPC tasks on master/regionserver Web UI by default

- [HBASE-20538](#) - Upgrade our hadoop versions to 2.7.7 and 3.0.3
- [HBASE-20565](#) - ColumnRangeFilter combined with ColumnPaginationFilter can produce incorrect result
- [HBASE-20614](#) - REST scan API with incorrect filter text file throws HTTP 503 Service Unavailable error
- [HBASE-20642](#) - Clients should re-use the same nonce across DDL operations
- [HBASE-20648](#) - HBASE-19364 "Truncate_preserve fails with table when replica region > 1" for master branch
- [HBASE-20649](#) - Validate HFiles do not have PREFIX_TREE DataBlockEncoding; ADDEDNDUM ADD MISSING FILE
- [HBASE-20649](#) - Validate HFiles do not have PREFIX_TREE DataBlockEncoding
- [HBASE-20681](#) - Explicitly include hamcrest in binary tarball
- [HBASE-20691](#) - Change the default WAL storage policy back to "NONE"
- [HBASE-20697](#) - Can't cache All region locations of the specify table by calling table.getRegionLocator().getAllRegionLocations()
- [HBASE-20705](#) - Having RPC quota on a table now no longer prevents Space Quota to be recreate/removed
- [HBASE-20706](#) - Prevent MTP from trying to reopen non-OPEN regions
- [HBASE-20723](#) - Custom hbase.wal.dir results in data loss because we write recovered edits into a different place than where the recovering region server looks for them
- [HBASE-20745](#) - Log when master proc wal rolls
- [HBASE-20752](#) - Make sure the regions are truly reopened after ReopenTableRegionsProcedure
- [HBASE-20770](#) - WAL cleaner logs way too much; gets clogged when lots of work to do
- [HBASE-20772](#) - Controlled shutdown fills Master log with the disturbing message 'No matching procedure found for rit=OPEN, location=ZZZZ, table=YYYYY, region=XXXX transition to CLOSED'
- [HBASE-20777](#) - RpcConnection could still remain opened after we shutdown the NettyRpcServer
- [HBASE-20780](#) - ServerRpcConnection logging cleanup Get rid of one of the logging lines in ServerRpcConnection by amalgamating all into one new-style log line.
- [HBASE-20781](#) - Save recalculating families in a WALEdit batch of Cells
- [HBASE-20794](#) - add INFO level log to createTable operation
- [HBASE-20795](#) - Allow option in BBKVComparator.compare to do comparison without sequence id
- [HBASE-20806](#) - Split style journal for flushes and compactions
- [HBASE-20810](#) - Include the procedure id in the exception message in HBaseAdmin for better debugging
- [HBASE-20812](#) - Add defaults to Table Interface so implementors don't have to
- [HBASE-20813](#) - Removed RPC quotas when the associated table/Namespcae is dropped off
- [HBASE-20817](#) - Infinite loop when executing ReopenTableRegionsProcedure
- [HBASE-20825](#) - Fix pre and post hooks of CloneSnapshot and RestoreSnapshot for Access checks
- [HBASE-20826](#) - Truncate really long RpcServer warnings unless TRACE is on
- [HBASE-20829](#) - Remove the addFront assertion in MasterProcedureScheduler.doAdd
- [HBASE-20833](#) - Modify pre-upgrade coprocessor validator to support table level coprocessors
- [HBASE-20839](#) - Fallback to FSHLog if we can not instantiated AsyncFSWAL when user does not specify AsyncFSWAL explicitly
- [HBASE-20853](#) - Polish "Add defaults to Table Interface so Implementors don't have to"
- [HBASE-20856](#) - PITA having to set WAL provider in two places
- [HBASE-20860](#) - Merged region's RIT state may not be cleaned after master restart
- [HBASE-20867](#) - RS may get killed while master restarts
- [HBASE-20869](#) - Endpoint-based Export use incorrect user to write to destination
- [HBASE-20875](#) - MemStoreLABImp::copyIntoCell uses 7% CPU when writing
- [HBASE-20878](#) - Data loss if merging regions while ServerCrashProcedure executing
- [HBASE-20882](#) - HBASE-20616 "TruncateTableProcedure is stuck in retry loop in TRUNCATE_TABLE_CREATE_FS_LAYOUT state" to branch-2.0
- [HBASE-20885](#) - Removed entry for RPC quota from hbase:quota when RPC quota is removed
- [HBASE-20887](#) - HBASE-20865 "CreateTableProcedure is stuck in retry loop in CREATE_TABLE_WRITE_FS_LAYOUT state"
- [HBASE-20903](#) - HBASE-20792 "info:servername and info:sn inconsistent for OPEN region" to branch-2.0
- [HBASE-20914](#) - Trim Master memory usage

- [HBASE-20921](#) - Possible NPE in ReopenTableRegionsProcedure
- [HBASE-20924](#) - "HBASE-20846 Restore procedure locks when master restarts"
- [HBASE-20935](#) - HStore.removeCompactedFiles should log in case it is unable to delete a file
- [HBASE-20939](#) - There will be race when we call suspendIfNotReady and then throw ProcedureSuspendedException
- [HBASE-20940](#) - HStore.cansplit should not allow split to happen if it has references
- [HBASE-20941](#) - Created and implemented HbckService in master
- [HBASE-20942](#) - Fix ArrayIndexOutOfBoundsException for RpcServer TRACE logging
- [HBASE-20975](#) - Lock may not be taken or released while rolling back procedure
- [HBASE-20978](#) - [amv2] Worker terminating UNNATURALLY during MoveRegionProcedure
- [HBASE-20981](#) - Rollback stateCount accounting thrown-off when exception out of rollbackState
- [HBASE-20989](#) - Minor, miscellaneous logging fixes
- [HBASE-21004](#) - to branch-2.0 HBASE-20708 "Remove the usage of RecoverMetaProcedure"
- [HBASE-21007](#) - Memory leak in HBase REST server
- [HBASE-21018](#) - RS crashed because AsyncFS was unable to update HDFS data encryption key
- [HBASE-21029](#) - Miscount of memstore's heap/offheap size if same cell was put
- [HBASE-21031](#) - Memory leak if replay edits failed during region opening
- [HBASE-21041](#) - Memstore's heap size will be decreased to minus zero after flush
- [HBASE-21047](#) - Object creation of StoreFileScanner thru constructor and close may leave refCount to -1
- [HBASE-21050](#) - Exclusive lock may be held by a SUCCESS state procedure forever
- [HBASE-21062](#) - Correctly use the defaultProvider value on the Providers enum when constructing a WALProvider
- [HBASE-21072](#) - Block out HBCK1 in hbase2
- [HBASE-21078](#) - [amv2] CODE-BUG NPE in RTP doing Unassign
- [HBASE-21083](#) - Introduce a mechanism to bypass the execution of a stuck procedure
- [HBASE-21088](#) - HStoreFile should be closed in HStore#hasReferences
- [HBASE-21120](#) - MoveRegionProcedure makes no progress; goes to STUCK

Region Server occasionally fails when HDFS data transport encryption is enabled

In rare cases, an HBase RegionServer on a Hadoop Data Transfer Encryption enabled cluster (`dfs.encrypt.data.transfer = true`) may crash because it is not able to update the encryption key.

Workaround: Restart the RegionServer.

Affected Versions: CDH 6.0.0

Fixed Versions: 6.0.1

Apache Issue: [HBASE-21018](#)

Cloudera Issue: CDH-71613

Prefetch sometimes doesn't work with encrypted file system

If HBase prefetch is enabled (`hbase.rs.prefetchblocksonopen = true`) on an encrypted HDFS cluster, HBase RegionServer may crash due to memory corruption.

Workaround: Disable HBase prefetch (`hbase.rs.prefetchblocksonopen = false`).

Affected Versions: CDH 6.0.0

Fixed Versions: 6.0.1

Apache Issue: [HBASE-20403](#)

Cloudera Issue: CDH-68666

Apache HDFS

The following issues are fixed in CDH 6.0.1:

- [HDFS-5040](#) - You can now see an audit log for admin commands and output the log of all DFS admin commands.

- [HDFS-10240](#) - Fixed an issue where the race between close/recoverLease leads to missing blocks.
- [HDFS-10453](#) - Fixed an issue where the ReplicationMonitor thread could get stuck for a long time due to the race between replication and delete of the same file in a large cluster.
- [HDFS-13051](#) - Fixed an issue where a deadlock occurs when rolleditlog rpc call happens and editPendingQ is full.
- [HDFS-13178](#) - Add a force option to DiskBalancer Execute command
- [HDFS-13181](#) - Add a configuration to DiskBalancer for valid plan hours
- [HDFS-13281](#) - Fixed an issue where the Namenode#createFile was not /.reserved/raw/ aware.
- [HDFS-13314](#) - NameNode optionally exits if it detects Fslmage corruption
- [HDFS-13322](#) - FUSE lib now recognizes the change of the Kerberos ticket cache path if it was changed with the KRB5CCNAME environment variable during the same user session.
- [HDFS-13339](#) - Fixed an issue where volume reference cannot be released and may lead to deadlock when DataXceiver does a check volume
- [HDFS-13721](#) - Fixed an NPE in DataNode due to an uninitialized DiskBalancer.
- [HDFS-13727](#) - The DiskBalancer now logs a full stack trace if it exits with an unhandled exception.
- [HDFS-13813](#) - Added a check to see if a child inode exists in the global FSDirectory dir when saving (serializing) INodeDirectorySection.

Apache Hive

Code Changes Should Not Be Required

The following fixes should not require code changes, but they contain improvements that might enhance your deployment:

- [HIVE-13696](#) - Modify fair-scheduler.xml and automatically update/validate jobs submitted to fair-scheduler
- [HIVE-15387](#) - NPE in HiveServer2 webUI Historical SQL Operations section
- [HIVE-16483](#) - Hive on Spark should populate split-related configurations to HiveConf
- [HIVE-17213](#) - Hive on Spark: file merging doesn't work for union all
- [HIVE-18977](#) - Listing partitions returns different results with JDO and direct SQL
- [HIVE-19048](#) - Initscript errors are ignored
- [HIVE-19133](#) - HiveServer2 WebUI phase-wise performance metrics not showing correctly
- [HIVE-19202](#) - CBO failed due to NullPointerException in HiveAggregate.isBucketedInput()
- [HIVE-19251](#) - ObjectStore.getNextNotification with LIMIT should use less memory
- [HIVE-19259](#) - CREATE VIEW that uses UNION ALL fails with 'Table not found'
- [HIVE-19265](#) - Potential NPE returned instead of actual exception in Hive#copyFiles
- [HIVE-19424](#) - NPE In MetaDataFormatters
- [HIVE-19668](#) - HiveServer2 service hanging due to over 30% of the heap wasted by duplicate org.antlr.runtime.CommonToken's and duplicate strings
- [HIVE-19752](#) - PerfLogger integration for critical Hive-on-S3 paths
- [HIVE-19870](#) - HCatalog dynamic partition query can fail if the table path is managed by Sentry
- [HIVE-19891](#) - inserting into external tables with custom partition directories may cause data loss
- [HIVE-20183](#) - Inserting from bucketed table can cause data loss if the source table contains an empty bucket
- [HIVE-20226](#) - HMS getNextNotification throws exception when request maxEvents exceed table's max_rows
- [HIVE-20345](#) - Drop database may hang if the tables get deleted from a different call

Hive Jobs Are Submitted to a Single Queue When Sentry is Deployed

Hive jobs are not submitted into the correct YARN queue when Hive is using Sentry because Hive does not use the YARN API to resolve the user or group of the job's original submitter. This causes the job to be placed in a queue using the placement rules based on the Hive user. The HiveServer2 fair scheduler queue mapping used for "non-impersonation" mode does not handle the primary-secondary queue mappings correctly.

Workaround: If you are a Hive and Sentry user, do not upgrade to CDH 6.0.0. This issue will be fixed as soon as possible. If you must use Hive and Sentry in CDH 6.0.0, see [YARN Dynamic Resource Pools Do Not Work with Hive When Sentry Is Enabled](#) for additional workarounds.

Affected Version: CDH 6.0.0

Fixed Versions: CDH 6.0.1, CDH 6.1.0 and later

Cloudera Issue: CDH-51596

Hue

The following issue is fixed in CDH 6.0.1:

Queries from ImpalaDaemonApi failing when Impala is configured with `webserver_htpassword`

When `webserver_htpassword_username` and `webserver_htpassword_password` are used to authenticate the Impala web UIs, the Hue JobBrowser Impala Queries' page returns a 404 error, even with Kerberos authentication.

Workaround: None

Fixed Versions: 6.0.1 6.1.0

Cloudera Issue: CDH-71138

Apache Impala

The following issues are fixed in CDH 6.0.1:

- [IMPALA-4908](#) - NULL floats with different value fields now compare equal.
- [IMPALA-7014](#) - Disabled stacktrace symbolisation by default.
- [IMPALA-7078](#) - Improved memory consumption of Avro scans of wide tables.
- [IMPALA-7145](#) - Fixed a memory leak in OpenSSL when spill-to-disk encryption is enabled.
- [IMPALA-7225](#) - REFRESH PARTITION on a single partition no longer resets its row count to -1.
- [IMPALA-7330](#) - After LOAD DATA, Impala now only refreshes the affected partition.
- [IMPALA-7360](#) - Avro scanner sometimes skips blocks when skip marker is on the HDFS block boundary.
- [IMPALA-7559](#) - Disabled Parquet stat filtering for UTC-normalized timestamp columns.

Apache Kudu

The following issues are fixed in CDH 6.0.1:

- [KUDU-2312](#) - Fixed a crash that could occur on some systems when a query had more than 16 predicates.
- [KUDU-2509](#) - Fixed use-after-free in case of a WAL replay error.

Apache Oozie

The following issues are fixed in CDH 6.0.1:

- [OOZIE-3193](#) - Applications are not killed when submitted via subworkflow
- [OOZIE-3330](#) - and [OOZIE-3331](#) - Spark options parsing bugfix

Cloudera Search

The following issues are fixed in CDH 6.0.1:

- [SOLR-11590](#) - Synchronize ZK connect/disconnect handling so that they are processed in linear order
- [SOLR-12343](#) - JSON Field Facet refinement can return incorrect counts/stats for sorted buckets
- [SOLR-12450](#) - Don't allow referral to external resources in various config files
- [SOLR-12516](#) - JSON range facets can incorrectly refine subfacets for buckets

CDH Upgrade fails to delete Solr data from HDFS

The CDH upgrade process fails to delete Solr data from HDFS and the recreated collections fail to be initialized due to the existing indexes.

Workaround: Perform the following steps *after* you run the CDH Upgrade wizard and *before* you finalize the HDFS upgrade:

1. Log in to the Cloudera Manager Admin Console.
2. Go to the Solr service page.

3. Stop the Solr service and dependent services. Click **Actions > Stop**.
4. Click **Actions > Reinitialize Solr State for Upgrade**.
5. Click **Actions > Bootstrap Solr Configuration**.
6. Start the Solr and dependent services. Click **Actions > Start**.
7. Click **Actions > Bootstrap Solr Collections**.

Affected Versions: CDH 6.0.0

Fixed Versions: Cloudera Manager 6.0.1

Cloudera Issue: OPSAPS-47502

Solr Service reports stale configurations even after restart

Solr reports stale configurations, and the Solr Server role fails to start with the following error: Role failed to start due to error: The archive already contains `creds.local.jceks`. The issue occurs if your deployment has Solr and HDFS uses LDAP Group Mapping.

Workaround: If you have a CDH 5 cluster and use LDAP Group Mapping, do not upgrade to CDH 6.0.0. If you have a CDH 6.0.0 cluster, disable LDAP Group Mappings.

Affected Versions: Cloudera Manager 6.0.0 and CDH 6.0.0

Fixed Versions: Cloudera Manager 6.0.1

Cloudera Issue: OPSAPS-47321

Cloudera Search configuration migration script fails to detect incompatible SecureAdminHandlers request handler

The `SecureAdminHandlers` request handler is incompatible with Apache Solr 7, which is used in CDH 6. The Cloudera Search configuration migration script fails to detect this incompatibility.

Workaround: Remove `SecureAdminHandlers` request handlers from the `solrconfig.xml` files of any configuration set that uses them during the [pre-upgrade configuration migration](#).

Affected Versions: CDH 6.0.0

Fixed Versions: CDH 6.0.1

Cloudera Issue: CDH-72239

Apache Spark

The following issues are fixed in CDH 6.0.1:

- [SPARK-21525](#) - [STREAMING] Check error code from supervisor RPC.
- [SPARK-23679](#) - [YARN] Setting `RM_HA_URLS` for `AmpFilter` to avoid redirect failure in YARN mode
- [SPARK-25253](#) - [PYSPARK] Refactor local connection & auth code

CVE-2019-10099: Apache Spark local files left unencrypted

Certain operations in Spark leave local files unencrypted on disk, even when local file encryption is enabled with `"spark.io.encryption.enabled"`.

This includes cached blocks that are fetched to disk (controlled by `spark.maxRemoteBlockSizeFetchToMem`) in the following cases:

- In SparkR when `parallelize` is used
- In Pyspark when `broadcast` and `parallelize` are used
- In Pyspark when `python udfs` is used

Products affected:

- CDH
- CDS Powered by Apache Spark

Affected versions:

- CDH 5.15.1 and earlier
- CDH 6.0.0
- CDS 2.1.0 release 1 and release 2
- CDS 2.2.0 release 1 and release 2
- CDS 2.3.0 release 3

Users affected: All users who run Spark on CDH and CDS in a multi-user environment.

Date/time of detection: July 2018

Severity (Low/Medium/High): 6.3 Medium ([CVSS AV:L/AC:H/PR:N/UI:R/S:U/C:H/I:H/A:N](#))

Impact: Unencrypted data accessible.

CVE: CVE-2019-10099

Immediate action required: Upgrade to a version of CDH containing the fix.

Workaround: Do not use of pyspark and the fetch-to-disk options.

Fixed versions:

- CDH 5.15.2
- CDH 5.16.0
- CDH 6.0.1
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 4

For the latest update on this issue see the corresponding Knowledge article: [TSB 20210-336: Apache Spark local files left unencrypted](#)

Apache YARN

The following issues are fixed in CDH 6.0.1:

- [YARN-6966](#) - NodeManager metrics may return wrong negative values when NM restart.
- [YARN-7542](#) - Fix issue that causes some Running Opportunistic Containers to be recovered as PAUSED.
- [YARN-8436](#) - FSParentQueue: Comparison method violates its general contract.
- [YARN-8518](#) - test-container-executor test_is_empty() is broken
- [YARN-8605](#) - TestDominantResourceFairnessPolicy.testModWhileSorting is flaky.

Unsupported Features in CDH 6.0.1

This page lists the unsupported features in CDH 6.0.1. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.0.1](#) on page 1170.

Apache Accumulo

Running Apache Accumulo on top of a CDH 6.0.x cluster is not currently supported. If you try to upgrade to CDH 6.0.x you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Cloudera Data Science Workbench

Cloudera Data Science Workbench is not supported with CDH 6.0.x. If you try to upgrade to CDH 6.0.x, you will be asked to remove the CDSW service from your cluster.

Cloudera Data Science Workbench 1.5.0 (and higher) is supported with CDH 6.1.x (and higher).

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 1134
- [YARN Unsupported Features](#) on page 1134

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.0.x:

- ACLs for the NFS gateway
- Aliyun Cloud Connector
- Erasure Coding
- HDFS NameNode Federation
- HDFS Router Based Federation
- HDFS truncate
- More than two NameNodes
- Openstack Swift
- Quota support for Storage Types
- SFTP FileSystem
- Upgrade Domain
- Variable length block
- ZStandard Compression Codec

YARN Unsupported Features

The following YARN features are not supported in CDH 6.0.x:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers
- Distributed Scheduling
- Docker on YARN (DockerContainerExecutor)
- Native Services
- New Aggregated Log File Format
- Node Labels
- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Estimator Service
- Resource Profiles
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.0.x:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction

The following features, introduced upstream in HBase, are not supported in CDH:

- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.0.x:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution
- Hive Metastore - Derby
- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))
- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka feature is not supported in CDH 6.0.x:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.
- Idempotent and transactional capabilities in the producer are currently an unsupported beta feature given their maturity and complexity. This feature will be supported in a future release.
- Kafka Connect is included in CDH 6.0.0, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- Kafka Streams is included in CDH 6.0.0, but is not supported. Instead, use Spark and Spark Streaming have a fully functional ETL/stream processing pipeline. See [Using Kafka with Apache Spark Streaming for Stream Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.0.0, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.
- Using Kafka with a JBOD setup is an unsupported beta feature given its maturity and complexity. Using JBOD in production will be supported only in a later release.
- The legacy Scala clients (producer and consumer) that are under the `kafka.producer.*` and `kafka.consumer.*` package are deprecated in CDH 6.0.0. See [Deprecated Scala-based Client API and New Java Client API](#) on page 1259.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.0.x:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.0.x:

- Pig on Tez is not supported in CDH 6.0.x ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.0.x:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.0.x:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

([Known Issue](#))

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.x, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.0.x:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)
- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is not supported
- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.0.x:

- [import-mainframe](#)

Incompatible Changes in CDH 6.0.1

**Important:**

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.0.1, grouped by component:

Apache Accumulo

Running Apache Accumulo on top of a CDH 6.0.x cluster is not currently supported. If you try to upgrade to CDH 6.0.x you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Apache Avro

API Changes

One method was removed in CDH 6.0.0:

```
GenericData.toString (Object datum, StringBuilder buffer)
```

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires GenericEnumSymbol - likely to break current Generic API users that often have String or Java Enum for these fields
- [AVRO-1502](#): Avro Objects now Serializable - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be HTrace
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.
- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Cloudera Data Science Workbench

Cloudera Data Science Workbench is not supported with CDH 6.0.x. If you try to upgrade to CDH 6.0.x, you will be asked to remove the CDSW service from your cluster.

Cloudera Data Science Workbench 1.5.0 (and higher) is supported with CDH 6.1.x (and higher).

Cloudera Issue: DSE-2769

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).

- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. The only additional configuration required to use HBase2Sink is to replace the component name in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

com.google.common.collect.ImmutableMap

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

- [HDFS Incompatible Changes](#) on page 1138
- [MapReduce](#) on page 1139
- [YARN](#) on page 1140

HDFS Incompatible Changes

CDH 6.0.1 introduces no new incompatible changes for HDFS.

CDH 6.0.0, introduces the following incompatible changes for HDFS:

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.

- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSClient#mkdirs` and `DFSClient#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.
- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.
 - All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.
- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0
- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.
- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0
 - asm from 3.2 to 5.0.4

MapReduce

CDH 6.0.1 introduces no new incompatible changes for MapReduce.

CDH 6.0.0, introduces the following incompatible changes:

- Support for MapReduce v1 has been dropped from CDH 6.0.0.

- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

CDH 6.0.1 introduces no new incompatible changes for YARN.

CDH 6.0.0 introduces no new incompatible changes for YARN.

Apache HBase

CDH 6.0.x contains the following downstream HBase incompatible change:

`hbase.security.authorization`

The default value for `hbase.security.authorization` has been changed from true to false. Secured clusters should make sure to explicitly set it to true in XML configuration file before upgrading to one of these versions ([HBASE-19483](#)). True as the default value of `hbase.security.authorization` was changed because not all clusters need authorization. (History: [HBASE-13275](#)) Rather, only the clusters which need authorization should set this configuration as true.

Incompatible Changes

For more information about upstream incompatible changes, see the Apache Reference Guide [Incompatible Changes](#) and [Upgrade Paths](#).

CDH 6.0.x contains the following upstream HBase incompatible changes:

- Public interface API changes:
 - [HBASE-15607](#): Admin
 - [HBASE-19112](#), [HBASE-18945](#): Cell
 - Region, Store, HBaseTestingUtility
- [HBASE-18792](#): hbase-2 needs to defend against hbck operations
- [HBASE-15982](#): Interface ReplicationEndpoint extends Guava's Service.
- [HBASE-18995](#): Split CellUtil into public CellUtil and PrivateCellUtil for Internal use only.
- [HBASE-19179](#): Purged the hbase-prefix-tree module and all references from the code base.
- [HBASE-17595](#): Add partial result support for small/limited scan; Now small scan and limited scan could also return partial results.
- [HBASE-16765](#): New default split policy, SteppingSplitPolicy.
- [HBASE-17442](#): Move most of the replication related classes from hbase-client to hbase-replication package.
- [HBASE-16196](#): The bundled JRuby 1.6.8 has been updated to version 9.1.9.0.
- [HBASE-18811](#): Filters have been moved from Public to LimitedPrivate.
- [HBASE-18697](#): Replaced hbase-shaded-server jar with hbase-shaded-mapreduce jar.
- [HBASE-18640](#): Moved mapreduce related classes out of hbase-server into separate hbase-mapreduce jar .
- [HBASE-19128](#): Distributed Log Replay feature has been removed.
- [HBASE-19176](#): Hbase-native-client has been removed.
- [HBASE-17472](#): Changed semantics of granting new permissions. Earlier, new grants would override previous permissions, but now, the new and existing permissions get merged.
- [HBASE-18374](#): Previous "mutate" latency metrics has been renamed to "put" metrics.
- [HBASE-15740](#): Removed Replication metric source.shippedKBs in favor of source.shippedBytes.
- [HBASE-13849](#): Removed restore and clone snapshot from the WebUI.
- [HBASE-13252](#): The concept of managed connections in HBase (deprecated before) has now been extinguished completely, and now all callers are responsible for managing the lifecycle of connections they acquire.
- [HBASE-14045](#): Bumped thrift version to 0.9.2.
- [HBASE-5401](#): Changes to number of tasks PE runs when clients are mapreduce. Now tasks == client count. Previous we hardcoded ten tasks per client instance.

Changed Behavior

CDH 6.0.x contains the following HBase behavior changes:

- [HBASE-14350](#): Assignment Manager v2 - Split/Merge have moved to the Master; it runs them now. Hooks around Split/Merge are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-18271](#): Moved to internal shaded netty.
- [HBASE-17343](#): Default MemStore to be CompactingMemStore instead of DefaultMemStore. In-memory compaction of CompactingMemStore demonstrated sizable improvement in HBase's write amplification and read/write performance.
- [HBASE-19092](#): Make Tag IA.LimitedPrivate and expose for CPs.
- [HBASE-18137](#): Replication gets stuck for empty WALs.
- [HBASE-17513](#): Thrift Server 1 uses different QOP settings than RPC and Thrift Server 2 and can easily be misconfigured so there is no encryption when the operator expects it.
- [HBASE-16868](#): Add a replicate_all flag to replication peer config. The default value is true, which means all user tables (REPLICATION_SCOPE != 0) will be replicated to peer cluster.
- [HBASE-19341](#): Ensure Coprocessors can abort a server.
- [HBASE-18469](#): Correct RegionServer metric of totalRequestCount.
- [HBASE-17125](#): Marked Scan and Get's setMaxVersions() and setMaxVersions(int) as deprecated. They are easy to misunderstand with column family's max versions, so use readAllVersions() and readVersions(int) instead.
- [HBASE-16567](#): Core is now up on protobuf 3.1.0 (Coprocessor Endpoints and REST are still on protobuf 2.5.0).
- [HBASE-14004](#): Fix inconsistency between Memstore and WAL which may result in data in remote cluster that is not in the origin (Replication).
- [HBASE-18786](#): FileNotFoundException opening a StoreFile in a primary replica now causes a RegionServer to crash out where before it would be ignored (or optionally handled via close/reopen).
- [HBASE-17956](#): Raw scans will also read TTL expired cells.
- [HBASE-17017](#): Removed per-region latency histogram metrics.
- [HBASE-19483](#): Added ACL checks to RSGroup commands - On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands.
- [HBASE-19358](#): Added ACL checks to RSGroup commands (HBASE-19483): On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands. Improved stability of splitting log when do failover.
- [HBASE-18883](#): Updated our Curator version to 4.0 - Users who experience classpath issues due to version conflicts are recommended to use either the hbase-shaded-client or hbase-shaded-mapreduce artifacts.
- [HBASE-16388](#): Prevent client threads being blocked by only one slow region server - Added a new configuration to limit the max number of concurrent request to one region server.
- [HBASE-15212](#): New configuration to limit RPC request size to protect the server against very large incoming RPC requests. All requests larger than this size will be immediately rejected before allocating any resources.
- [HBASE-15968](#): This issue resolved two long-term issues in HBase: 1) Puts may be masked by a delete before them, and 2) Major compactions change query results. Offers a new behavior to fix this issue with a little performance reduction. Disabled by default. See the issue for details and caveats.
- [HBASE-13701](#): SecureBulkLoadEndpoint has been integrated into HBase core as default bulk load mechanism. It is no longer needed to install it as a coprocessor endpoint.
- [HBASE-9774](#): HBase native metrics and metric collection for coprocessors.
- [HBASE-18294](#): Reduce global heap pressure: flush based on heap occupancy.

Apache Hive/Hive on Spark/HCatalog

Apache Hive

The following changes are introduced to Hive in CDH 6.0.0, and are not backwards compatible:

- [UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting](#) on page 1248
- [Support for UNION DISTINCT](#) on page 1249
- [OFFLINE and NO_DROP Options Removed from Table and Partition DDL](#) on page 1250
- [DESCRIBE Query Syntax Change](#) on page 1250
- [CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names](#) on page 1250
- [Reserved and Non-Reserved Keyword Changes in HiveQL](#) on page 1250

- [Apache Hive API Changes in CDH 6.0.0](#) on page 1252
- [Apache Hive Configuration Changes in CDH 6.0.0](#) on page 1253
- [HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes](#) on page 1256
- [Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column](#) on page 1256
- [Hive Logging Framework Switched to SLF4J/Log4j 2](#) on page 1256
- [Deprecated Parquet Java Classes Removed from Hive](#) on page 1256
- [Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms](#) on page 1257
- [S3N Connector Is Removed from CDH 6.0](#) on page 1257
- [Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request](#) on page 1257
- [Support Added for Escaping Carriage Returns and New Line Characters for Text Files \(LazySimpleSerDe\)](#) on page 1258
- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1258

Changing Table File Format from ORC with the ALTER TABLE Command Not Supported in CDH 6

Changing the table file format from ORC to another file format with the ALTER TABLE command is not supported in CDH 6 (it returns an error).

UNION ALL Statements Involving Data Types from Different Type Groups No Longer Use Implicit Type Casting

Prior to this change, Hive performed implicit casts when data types from different type groups were specified in queries that use UNION ALL. For example, before CDH 6.0, if you had the two following tables:

Table "one"

| one.col_1 | one.col_2 | one.col_3 |
|-----------|-----------|-----------|
| 21 | hello_all | b |

Where col_1 datatype is int, col_2 datatype is string, and col_3 datatype is char(1).

Table "two"

| two.col_4 | two.col_5 | two.col_6 |
|-----------|-----------|-----------|
| 75.0 | abcde | 45 |

Where col_4 datatype is double, col_5 datatype is varchar(5), and col_6 datatype is int.

And you ran the following UNION ALL query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS col_3 FROM two;
```

You received the following result set:

| _u1.col_1 | _u1.col_2 | _u1.col_3 |
|-----------|-----------|-----------|
| 75.0 | abcde | 4 |
| 21.0 | hello | b |

```
+-----+-----+-----+-----+
```

Note that this statement implicitly casts the values from table `one` with the following errors resulting in data loss:

- `one.col_1` is cast to a `double` datatype
- `one.col_2` is cast to a `varchar(5)` datatype, which truncates the original value from `hello_all` to `hello`
- `one.col_3` is cast to a `char(1)` datatype, which truncates the original value from `45` to `4`

In CDH 6.0, no implicit cast is performed across different type groups. For example, `STRING`, `CHAR`, and `VARCHAR` are in one type group, and `INT`, `BIGINT`, and `DECIMAL` are in another type group, and so on. So, in CDH 6.0 and later, the above query that uses `UNION ALL`, returns an exception for the columns that contain datatypes that are not part of a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
 - The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.
- **Behavior in CDH 6:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
 - The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:
 - `ENABLE | DISABLE NO_DROP [CASCADE]`
 - `ENABLE | DISABLE OFFLINE`
 - `ALTER TABLE ... IGNORE PROTECTION`
- The following support has also been removed from the `HiveMetastoreClient` class:

The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, `data`). *Non-reserved keywords* can be used as table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|---------|------------|------------|----------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |
| START | | | |

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|---------|--------|--------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |
| BOOLEAN | BOTH | BY | CREATE |

| | | | |
|-----------|----------|-----------|-----------|
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|--------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLMIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|---------------|---------|-------------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |
| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252
- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a `CLOB` data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like "=", "<>", and "!=" might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with `CLOB` data types. There is no equivalent "<>" operator that is compatible with `CLOB`. So there is no equivalent operator for the above example that uses the "<>" inequality operator. The equivalent for "=" is the `LIKE` operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
```

```
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253
- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(hive.server2.enable.impersonation\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.

3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned table but do not filter on the partition column. | <code>false</code> |
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)
- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (`hive.server2.enable.impersonation`) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`
 - **Description:** Sets the file format in which a query's intermediate results are stored.
3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:

```
org.apache.hive.service.cli.thrift
```

To the following *new* namespace:

```
org.apache.hive.service.rpc.thrift
```

- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale of 5, the value returned for zero was returned as 0. *Now*, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the `INPUTFORMAT` to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat` and set the `OUTPUTFORMAT` to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`
- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanup(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|--|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |
| REF_GENERATION | Specifies how values in the <code>SELF_REFERENCING_COL_NAME</code> column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the `SerDe` property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, `'r'` or `'n'` cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the [LazySerDeParameters](#) class. For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

There are no incompatible changes in this release.

Apache Impala

List of Reserved Words Updated

The list of [reserved words](#) in Impala was updated in CDH 6.0.

If you need to use the reserved words from previous versions of CDH, set the `impalad` and `catalogd` startup option, `reserved_words_version`, to `"2.11.0"`.

Decimal V2 Used by Default

In Impala, two different behaviors of `DECIMAL` types are supported. In CDH 6.0, `DECIMAL V2` is used by default. See [DECIMAL Type](#) for detail information.

If you need to continue using the first version of the `DECIMAL` type for the backward compatibility of your queries, set the `DECIMAL_V2` query option to `FALSE`.

Behavior of Column Aliases Changed

To conform to the SQL standard, Impala no longer performs alias substitution in the subexpressions of `GROUP BY`, `HAVING`, and `ORDER BY`.

For example, the following statements will now result in syntax errors.

```
SELECT int_col / 2 AS x
FROM functional.alltypes
GROUP BY x / 2;

SELECT int_col / 2 AS x
FROM functional.alltypes
ORDER BY -x;

SELECT int_col / 2 AS x
FROM functional.alltypes
GROUP BY x
HAVING x > 3;
```

Default PARQUET_ARRAY_RESOLUTION Changed

The `PARQUET_ARRAY_RESOLUTION` query option controls the path-resolution behavior for Parquet files with nested arrays. The default value for the `PARQUET_ARRAY_RESOLUTION` was changed to `THREE_LEVEL` in CDH 6.0. Review your queries to see if the default value change result in different result sets.

See [PARQUET_ARRAY_RESOLUTION Query Option](#) for the information about the option.

Non-standard Timezone Names Unsupported

As the initial step for IANA timezone integration in the coming release, Impala will drop the support for non-standard timezone aliases in CDH 6.0.

Impala supports a majority of the [IANA time zones](#) with the following exceptions of time zones not supported: America/Fort_Nelson, America/Punta_Arenas, Asia/Atyrau, Asia/Barnaul, Asia/Famagusta, Asia/Tomsk, Asia/Yangon, Europe/Astrakhan, Europe/Kirov, Europe/Saratov, Europe/Ulyanovsk, GMT+0, GMT-0, ROC

See [Unsupported Time Zone](#) for the list of time zone aliases no longer supported and the canonical names you can use to replace the unsupported aliases with.

Return Type Changed for EXTRACT and DATE_PART Functions in CDH 6.0 / Impala 3.0

The following changes were made to the `EXTRACT` and `DATE_PART` functions:

- The output type of the `EXTRACT` and `DATE_PART` functions was changed to `BIGINT`.
- Extracting the millisecond part from a `TIMESTAMP` returns the seconds component and the milliseconds component. For example, `EXTRACT (CAST('2006-05-12 18:27:28.123456789' AS TIMESTAMP), 'MILLISECOND')` will return 28123.

Apache Kafka

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see [previous entry](#)). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`
- `kafka.tools.ExportZkOffset`
- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- `GroupCoordinatorNotAvailableException`
- `GroupLoadInProgressException`
- `NotCoordinatorForGroupException`
- `kafka.common.KafkaStorageException`

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Apache Kudu

There are no incompatible changes in this release.

Apache Oozie

There are no incompatible changes in this release.

Apache Parquet

Packages and Group ID Renamed

As a part of the Apache incubation process, all Parquet packages and the project’s group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|----------------------------|
| Java Package Names | parquet.* | org.apache.parquet.* |
| Group ID | com.twitter | org.apache.parquet |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update *.java files:

| Before | After |
|---------------------------|--------------------------------------|
| import parquet.* ; | import org.apache.parquet.* ; |

Update pom.xml:

| Before | After |
|---|--|
| <pre> <dependency> <groupId> com.twitter </groupId> <version> \${parquet.version} </version> </dependency> </pre> | <pre> <dependency> <groupId> org.apache.parquet </groupId> <version> \${parquet.version} </version> </dependency> </pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Pig

The following change is introduced to Pig in CDH 6.0 and is not a backwards compatible change. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0 JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 58: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|--|---------------------------------|--|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |
| VAR (stats) | Generates the variance of a set of values. | variance | None |
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 1156. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 1156. |
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way | IN | None |

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|---------|
| | to filter using a logical disjunction over many values. | | |

For more information about using Hive UDFs, see https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 59: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|-----------------------------|---|---|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |
| Examples: | <pre> register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); } </pre> | <pre> define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc)); </pre> |

Although DataFu `StreamingQuantile` and `StreamingMedian` might appear to match Hive's `percentile_approx` function, Pig cannot consume `percentile_approx`.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 60: DataFu Functions with No Hive UDF Equivalent

| | | |
|---------------------------------|--------------------------------------|--------------------------------|
| <code>AppendToBag (bags)</code> | <code>AssertUDF (util)</code> | <code>BagConcat (bags)</code> |
| <code>BagGroup (bags)</code> | <code>BagLeftOuterJoin (bags)</code> | <code>BagSplit (bags)</code> |
| <code>BoolToInt (util)</code> | <code>CountEach (bags)</code> | <code>DistinctBy (bags)</code> |

| | | |
|----------------------------|-----------------------------|--------------------------------|
| EmptyBagToNull (bags) | EmptyBagToNullFields (bags) | Enumerate (bags) |
| FirstTupleFromBag (bags) | HaversineDistInMiles (geo) | IntToBool (util) |
| MarkovPairs | NullToEmptyBag (bags) | PageRank (linkanalysis) |
| PrependToBag (bags) | ReservoirSample (sampling)* | ReverseEnumerate (bags) |
| SampleByKey (sampling)* | SessionCount (sessions) | Sessionize (sessions) |
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with TABLESAMPLE in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.
- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

Apache Sentry contains the following incompatible change in CDH 6.0.0:

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.
- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.
- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.

Since compile-time type-safety in Python and R is not a language feature, the concept of Dataset does not apply to these languages' APIs. Instead, DataFrame remains the primary programming abstraction.

- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

The following changes are introduced in CDH 6.0, and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0. Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a CHAR or VARCHAR column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to `true` to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPSWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with `hcatalog` jobs or when `hive import` with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with `--hcatalog-table <HIVE_VIEW>`

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the `--hcatalog-table` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table" --hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using `EscapeUtils`. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySQL after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of `--input-null-string` and `--input-null-non-string` options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using `--direct` connector and a MySQL database

The MySQL direct connector does not support the `--null-string`, `--null-non-string`, `--input-null-string`, and `--input-null-non-string` options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

There are no incompatible changes in this release.

Timezone Names Unsupported in Impala in CDH 6.0.1

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|------------|------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |

| | |
|--|--------------------------------|
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |

| | |
|--|----------------------|
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |

| | |
|------------------------------|------------------------------|
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |

| | |
|--|------------------------------|
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |
| FJST | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |

| | |
|-------------------------------|-------------------|
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |

| | |
|-------------------------------|--------------------|
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |

| | |
|--------------------------------|----------------------|
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |

| | |
|-------------------------------|----------------------|
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |

| | |
|---------------------------------|------------------------|
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |
| Srednekolymk Time | Asia/Srednekolymk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |

| | |
|---------------------|--------------------|
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |

| | |
|-------------------------------|--------------------|
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.0.1

The following sections describe the known issues in CDH 6.0.1, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-1000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.



Important: If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can workaround the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|----------------------------------|---|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.
5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.

- 10 Click **Save Changes**.
- 11 Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.
- 10 Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|-----------------------|---|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

- (1) Ensure that the kernel is up to date.

- **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
- **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
- **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

Running Apache Accumulo on top of a CDH 6.0.x cluster is not currently supported. If you try to upgrade to CDH 6.0.x you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Affected Versions: CDH 6.0.x

Cloudera Data Science Workbench

Cloudera Data Science Workbench is not supported with CDH 6.0.x. Cloudera Data Science Workbench 1.5.0 (and higher) is supported with CDH 6.1.x (and higher).

Cloudera Issue: DSE-2769

Apache Crunch Known Issues



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

Apache Flume Known Issues

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to `false`.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to Invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x
- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

Hadoop LdapGroupsMapping does not support LDAPS for self-signed LDAP server

Hadoop LdapGroupsMapping does not work with LDAP over SSL (LDAPS) if the LDAP server certificate is self-signed. This use case is currently not supported even if Hadoop User Group Mapping LDAP TLS/SSL Enabled, Hadoop User Group Mapping LDAP TLS/SSL Truststore, and Hadoop User Group Mapping LDAP TLS/SSL Truststore Password are filled properly.

Affected Versions: CDH 5.x and 6.0.x versions

Fixed Versions: CDH 6.1.0

Apache Issue: [HADOOP-12862](#)

Cloudera Issue: CDH-37926

HDFS

Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by

using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH
- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.
- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

HDFS Snapshot corruption

A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Products affected: HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0 - 6.2.1, 6.3.0, 6.3.1, 6.3.2

Users affected: Any clusters with HDFS Snapshots enabled

Impact: A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Standby NameNode detects the inconsistent snapshot data structure and shuts itself down. To recover from this situation, the fsimage must be repaired and put back into both NameNodes' fsimage directory for the Standby NameNode to start normally. The Active NameNode stays up. However no fsimage checkpoint is performed because the Standby NameNode is down.

This problem can also prevent snapshots from being deleted or files within snapshots being listed. The following is an example of a typical error:

```
hdfs dfs -deleteSnapshot /path snapshot_123
deleteSnapshot: java.lang.IllegalStateException
```

The recovery of the corrupt fsimage can result in the loss of snapshots.

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: Alternatively, avoid using snapshots. Cloudera BDR uses snapshots automatically when the relevant directories are snapshottable. Hence, we strongly recommend avoiding the upgrade to the affected releases if you are using BDR. For information and instructions, see [Enabling and Disabling HDFS Snapshots](#).

Addressed in release/refresh/patch: CDH 6.3.3

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-390: HDFS Snapshot corruption](#)

CVE-2018-1296 Permissive Apache Hadoop HDFS listXAttr Authorization Exposes Extended Attribute Key/Value Pairs

AHDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent.

Products affected: Apache HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0, 6.0.1, 6.1.0

Users affected: Users who store sensitive data in extended attributes, such as users of HDFS encryption.

Date/time of detection: December 12, 2017

Detected by: Rushabh Shah, Yahoo! Inc., Hadoop committer

Severity (Low/Medium/High): Medium

Impact: HDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent. This affects features that store sensitive data in extended attributes.

CVE: CVE-2018-1296

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: If a file contains sensitive data in extended attributes, users and admins need to change the permission to prevent others from listing the directory that contains the file.

Addressed in release/refresh/patch:

- CDH 5.15.2, 5.16.1
- CDH 6.1.1, 6.2.0

OIV ReverseXML processor fails

The HDFS OIV ReverseXML processor fails if the XML file contains escaped characters.

Affected Versions: CDH 6.x

Apache Issue: [HDFS-12828](#)

Cannot move encrypted files to trash

With HDFS encryption enabled, you cannot move encrypted files or directories to the trash directory.

Workaround: To remove encrypted files/directories, use the following command with the `-skipTrash` flag specified to bypass trash.

```
rm -r -skipTrash /testdir
```

Affected Versions: All CDH versions

Apache Issue: [HADOOP-10902](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:
 - Install CDH using Cloudera Manager; *or*
 - Start the NFS gateway as root; *or*
 - [Start the NFS gateway without using packages](#); *or*
 - You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the portmap.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to 777 on `.snapshot` directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

Permissions for `dfs.namenode.name.dir` incorrectly set

Hadoop daemons should set permissions for the `dfs.namenode.name.dir` (or `dfs.name.dir`) directories to `drwx-----` (700), but in fact these permissions are set to the file-system default, usually `drwxr-xr-x` (755).

Workaround: Use `chmod` to set permissions to 700.

Affected Versions: All CDH versions

Apache Issue: [HDFS-2470](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
java.lang.NullPointerException at
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler
- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

NodeManager fails because of the changed default location of container executor binary

The default location of container-executor binary and .cfg files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`. Because of this change, if you did not have the mount options `-noexec` and `-nosuid` set on `/opt`, the NodeManager can fail to start up as these options are set on `/var`.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the `-noexec` and `-nosuid` mount options on `/var` or change the container-executor binary and .cdf path using the `CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR` environment variable.

The Standby Resource Manager redirects `/jmx` and `/metrics` requests to the Active Resource Manager.

When ResourceManager high availability is enabled the Standby Resource Manager redirects `/jmx` and `/metrics` requests to the Active Resource Manager. This causes the following issues in Cloudera Manager:

- If **Enable Kerberos Authentication for HTTP Web-Console** is disabled: Cloudera Manager shows statistics for the wrong server.
- If **Enable Kerberos Authentication for HTTP Web-Console** is enabled: connection from the agent to the standby fails with the `HTTPError: HTTP Error 401: Authentication required` error message. As a result, the health of the Standby Resource Manager will become bad.

Workaround: N/A

Affected Versions: CDH 6.0.x, CDH 6.1.0

Fixed Version: CDH 6.1.1

Cloudera Issue: CDH-76040

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, Enable Fair Scheduler Continuous Scheduler is turned off by default.

Workaround: Turn off `Enable Fair Scheduler Continuous Scheduling` in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on `Fair Scheduler Assign Multiple Tasks`.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated `mapred-site.xml` that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

[Apache HBase Known Issues](#)

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.
2. Find the **Enable Audit Collection** property and clear it.

3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x
- HDP 3.1.5
- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.
 - If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:
 - Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
 - At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x
- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for `hbase-site.xml` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom `hbase-site` →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each `RegionServer` under the `RegionServer/Server JMX metrics` endpoint. When short circuit reads are not enabled, this metric will be zero. When short circuit reads are enabled and the data locality for this `RegionServer` is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Default limits for `PressureAwareCompactionThroughputController` are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP

- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4
- **Workaround:**
 - Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
 - An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

Data loss with restore snapshot

The restore snapshot command causes data loss when the target table was split or truncated after snapshot creation.

Products affected: HBase

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0
- CDH 6.3.0

User affected: Users relying on Restore Snapshot functionality.

Impact: Restored table could have missing data when split or truncate happened after snapshot creation.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not use Restore Snapshot. The same functionality can be achieved if the table is deleted and Clone Snapshot is used instead of restoring a table's state to the snapshot.

```
hbase> disable 'table'
hbase> drop 'table'
hbase> clone_snapshot 'snapshot_name', 'table'
hbase> enable 'table'
```

Addressed in release/refresh/patch:

- CDH 6.2.1

- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-379: Data loss with restore snapshot](#)

CDH users must not use Apache HBase's OfflineMetaRepair tool

OfflineMetaRepair helps you to rebuild the HBase meta table from the underlying file system. This tool is often used to correct meta table corruption or loss. It is designed to work only with hbase-1.x (CDH 5.x). Users must not run the OfflineMetaRepair tool against CDH 6.x since it uses hbase-2.x. If a user runs OfflineMetaRepair tool in CDH 6.x, then it will break or corrupt the HBase meta table.

If you have already corrupted your meta table or you believe your meta table requires the use of something like the former OfflineMetaRepair tool, do not attempt any further changes, contact Cloudera Support.

Products affected: CDH

Releases affected:

- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0
- CDH 6.3.0

User affected: Clusters with HBase installed.

Impact: Cluster becomes inoperable.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not run OfflineMetaRepair tool.

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-376: CDH users must not use Apache HBase's OfflineMetaRepair tool](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a DataNode can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different DataNodes, meaning that there will be one RegionServer per DataNode per HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

`IntegrationTestReplication` fails if replication does not finish before the `verify` phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

`ExportSnapshot` or `DistCp` operations may fail on the Amazon `s3a://` protocol

`ExportSnapshot` or `DistCP` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO later. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

Export to Azure Blob Storage (the `wasb://` or `wasbs://` protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController `postOperation` problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive / HCatalog / Hive on Spark Known Issues

This topic also contains:

- [HCatalog Known Issues](#)
- [Hive on Spark Known Issues](#)

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: `Arithmetic exception [divide by] 0`. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the `SELECT` clause on large values in columns with the data type of `BIGINT` might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are `BIGINT` data types in the `SELECT` clause of the query, incorrect results might be returned. Comparison operators include `==`, `!=`, `<`, `<=`, `>`, and `>=`. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference of values in such columns is out of range for a `LONG` (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 - (-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a `LONG` (64-bit) data type can hold.

Workaround: Use a `DECIMAL` type instead of `BIGINT` for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the `ORDER BY` clause is not supported for `SELECT *` queries

When column positions are specified in `ORDER BY` clauses, they are not honored for `SELECT *` queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

ALTER PARTITION ... SET LOCATION does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use ALTER PARTITION ... SET LOCATION on S3 or between S3 and HDFS. The rest of the ALTER PARTITION commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Commands run against an Oracle-backed metastore might fail

Commands run against an Oracle-backed Metastore fail with error:

```
javax.jdo.JDODataStoreException Incompatible data type for column TBLS.VIEW_EXPANDED_TEXT
: was CLOB (datastore),
but type expected was LONGVARCHAR (metadata). Please check that the type in the datastore
and the type specified in the MetaData are consistent.
```

This error might occur if the metastore is run on top of an Oracle database with the configuration property `datanucleus.validateColumns` set to true.

Workaround: Set `datanucleus.validateColumns=false` in the `hive-site.xml` configuration file.

Affected Versions: All CDH versions

Cannot create archive partitions with external HAR (Hadoop Archive) tables

ALTER TABLE ... ARCHIVE PARTITION is not supported on external tables.

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types Server and URI are not supported in "SHOW GRANT ROLE *roleName* on OBJECT *objectName*" statements

Workaround: Use SHOW GRANT ROLE *roleName* to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

Hive on Spark (HoS) Known Issues

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form "client.RpcRetryingCaller: Call exception...", then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hue Known Issues

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - *The Add Description* field in the Table schema browser does not sanitize user inputs as expected.
- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower
- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower
- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

Hue allows unsigned SAML assertions

If Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

Products affected: Hue, CDH

Releases affected:

- CDH 5.15.x and earlier
- CDH 5.16.0, 5.16.1
- CDH 6.0.x
- CDH 6.1.x

User affected: All users who are using SAML with Hue.

CVE: CVE-2019-14775

Date/time of detection: January 2019

Detected by: Joel Snape

Severity (Low/Medium/High): High

Impact:

This is a significant security risk as it allows anyone to fake their access validity and therefore access Hue, even if they should not have access. In more detail: if Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

CVE: CVE-2019-14775

Immediate action required:

- **Upgrade (recommended):** Upgrade to a version of CDH containing the fix.
- **Workaround:** None

Addressed in release/refresh/patch:

- CDH 5.16.2
- CDH 6.2.0

Hue external users granted super user privileges in C6

When using either the `LdapBackend` or the `SAML2Backend` authentication backends in Hue, users that are created on login when logging in for the first time are granted superuser privileges in CDH 6. This does not apply to users that are created through the User Admin application in Hue.

Products affected: Hue

Releases affected: CDH 6.0.0, CDH 6.0.1, CDH 6.1.0

Users affected: All user

Date/time of detection: Dec/12/18

Severity (Low/Medium/High): Medium

Impact:

The superuser privilege is granted to any user that logs in to Hue when LDAP or SAML authentication is used. For example, if you have the `create_users_on_login` property set to `true` in the **Hue Service Advanced Configuration Snippet (Safety Valve) for `hue_safety_valve.ini`**, and you are using LDAP or SAML authentication, a user that logs in to Hue for the first time is created with superuser privileges and can perform the following actions:

When the `SAML2Backend` is used, Hue accounts that have superuser privileges can:

- Create/Delete users and groups
- Assign users to groups
- Alter group permissions

However, when the `SAML2Backend` is used, users can only log in to Hue using SAML authentication.

When the `LdapBackend` is used, Hue accounts that have superuser privileges can:

- Synchronize Hue users with your LDAP server
- Create local users and groups (these local users can login to Hue only if the mode of multi-backend authentication is set up as `LdapBackend` and `AllowFirstUserDjangoBackend`)
- Assign users to groups
- Alter group permissions

This impact *does not* apply to the following other scenarios:

- When users are synced with your LDAP server manually by using the User Admin page in Hue.
- When you are using other authentication methods. For example:
 - `AllowFirstUserDjangoBackend`
 - Spnego
 - PAM
 - Oauth

When the `LdapBackend` and `AllowFirstUserDjangoBackend` are used, administrators should note:

- Local users, including users created by unexpected superusers, can login through `AllowFirstUserDjangoBackend`.
- Local users in Hue that created as hive, hdfs, or solr have privileges to access protected data and alter permissions in security app.
- Removing the `AllowFirstUserDjangoBackend` authentication backend can stop local users login to Hue, but it requires the administrator to have Cloudera Manager access



Note: Regardless of the authentication backend in use, the Hue superuser cannot perform the following tasks:

- Make any changes related to Sentry if the user has not been granted any privileges in Sentry. The Hue superuser can only view the Security app in the Hue UI.
- Change the authentication backends. This task requires access to Cloudera Manager.

CVE: CVE-2019-7319

Immediate action required: Upgrade and follow the instructions below.

Addressed in release/refresh/patch: CDH 6.1.1 and CDH 6.2.0

After upgrading to 6.1.1 or later, you must run the following update statement in the Hue database:

```
UPDATE useradmin_userprofile SET `creation_method` = 'EXTERNAL' WHERE `creation_method` = 'CreationMethod.EXTERNAL';
```



Important: If the Hue database is using MySQL, before you run this UPDATE statement, check if safe mode is on by using the following query:

```
SELECT @@SQL_SAFE_UPDATES;
```

If the safe mode is turned on, it returns '1'. You can temporarily set it to off by using the following SET statement:

```
SET SQL_SAFE_UPDATES = 0;
```

After running the update statement, to re-enable safe mode:

```
SET SQL_SAFE_UPDATES = 1;
```

After executing the UPDATE statement, new Hue users are no longer automatically created as superusers.

To find out the list of superusers, run SQL query:

```
SELECT username FROM auth_user WHERE superuser = 1;
```

Users who obtained superuser privilege due to this issue need to be revoked manually by using the following steps:

1. Log in to the Hue UI as an administrator.
2. In the upper right corner of the page, click the user drop-down list and select **Manage User**:
3. In the User Admin page, make sure that the **Users** tab is selected and click the name of the user in the list that you want to edit:
4. In the Hue Users - Edit user page, click **Step 3: Advanced**:
5. Clear the checkbox for **Superuser status**:
6. At the bottom of the page, click **Update user** to save the change.

For the latest update on this issue see the corresponding Knowledge article:

[TSB 2019-360: Hue external users granted super user privileges in C6](#)

Hue does not support the Spark App

Hue does not currently support the Spark application.

Connecting to PostgreSQL Database Fails with Error "No module named psycopg2"

When configuring Hue to use a PostgreSQL database, the connection fails with the following error:

```
Error loading psycopg2 module: No module named psycopg2
```

Workaround: Install the `psycopg2` Python package as documented in [Installing the psycopg2 Python Package](#).

Affected Versions: All CDH 6 versions

Fixed Versions: None

Apache Issue: N/A

Cloudera Issue: CDH-65804

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname` only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using Thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Slow queries for Parquet tables with `convert_legacy_hive_parquet_utc_timestamps=true`

The configuration setting `convert_legacy_hive_parquet_utc_timestamps=true` uses an underlying function that can be a bottleneck on high volume, highly concurrent queries due to the use of a global lock while loading time zone information. This bottleneck can cause slowness when querying Parquet tables, up to 30x for scan-heavy queries. The amount of slowdown depends on factors such as the number of cores and number of threads involved in the query.



Note:

The slowdown only occurs when accessing `TIMESTAMP` columns within Parquet files that were generated by Hive, and therefore require the on-the-fly timezone conversion processing.

Workaround: Store the `TIMESTAMP` values as strings in one of the following formats:

- `yyyy-MM-dd`
- `yyyy-MM-dd HH:mm:ss`
- `yyyy-MM-dd HH:mm:ss.SSSSSSSS`

The date can have the 1-9 digits in the fractional part.

Impala implicitly converts such string values to `TIMESTAMP` in calls to date/time functions.

Affected Versions: CDH 6.0.x versions

Fixed Versions: CDH 6.1.0

Apache Issue: [IMPALA-3316](#)

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \{(string)\} [=:].*` And the replacement could be for example: `secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

.

Products affected:

- CDP Private Cloud Base
- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: [CVE-2021-28131](#)

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Authenticated user with access to active session or query id can hijack other Impala session or query

If an authenticated Impala user supplies a valid query id to Impala's HS2 and Beeswax interfaces, they can perform operations on other sessions or queries when normally they do not have privileges to do so.

Releases affected:

- CDH 5.16.x and lower
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0

Users affected: All Impala users of affected versions.

Date/time of detection: 21st May 2019

Severity (Low/Medium/High): 7.5 (High) ([CVSS 3.0: AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:N/A:N](#))

Impact: Neither the original issue or the fix affect the normal use of the system.

CVE: CVE-2019-10084

Immediate action required: There is no workaround, upgrade to a version of CDH containing the fix.

Addressed in release/refresh/patch: CDH 6.2.1 and higher versions

XSS Cloudera Manager

Malicious Impala queries can result in Cross Site Scripting (XSS) when viewed in Cloudera Manager.

Products affected: Apache Impala

Releases affected:

- Cloudera Manager 5.13.x, 5.14.x, 5.15.1, 5.15.2, 5.16.1
- Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Users affected: All Cloudera Manager Users

Date/time of detection: November 2018

Severity (Low/Medium/High): High

Impact: When a malicious user generates a piece of JavaScript in the impala-shell and then goes to the Queries tab of the Impala service in Cloudera Manager, that piece of JavaScript code gets evaluated, resulting in an XSS.

CVE: CVE-2019-14449

Immediate action required: There is no workaround, upgrade to the latest available maintenance release.

Addressed in release/refresh/patch:

- Cloudera Manager 5.16.2
- Cloudera Manager 6.0.2, 6.1.1, 6.2.0, 6.3.0

In Impala with Sentry enabled, REVOKE ALL ON SERVER does not remove the privileges granted with the GRANT option

If you grant a role the ALL privilege at the SERVER scope with the WITH GRANT OPTION clause, you cannot revoke the privilege. Although the SHOW GRANT ROLE command will show that the privilege has been revoked immediately after you run the command, the ALL privilege will reappear when you run the SHOW GRANT ROLE command after Sentry refreshes.

Immediate Action Required: Once the privilege has been granted, the only way to remove it is to delete the role.

Affected Versions: CDH 6.0.0, CDH 6.0.1, CDH 5.15.0, CDH 5.15.1, CDH 5.14.x and all prior releases

Fixed Versions: CDH 6.1.0, CDH 6.0.2, CDH 5.16.0, CDH 5.15.2

Cloudera Issue: TSB-341

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate
section memory!
terminate called after throwing an instance of
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>
>'
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max
echo 2000000 > /proc/sys/kernel/pid_max
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)

Breakpad minidumps can be very large when the thread count is high

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the `impalad` daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Timestamp type-casted to varchar in a binary predicate can produce incorrect result

In an Impala query the timestamp can be type-casted to a varchar of smaller length to convert a timestamp value to a date string. However, if such Impala query is used in a binary comparison against a string literal, it can produce incorrect results, because of a bug in the expression rewriting code. The following is an example of this:

```
> select * from (select cast('2018-12-11 09:59:37' as timestamp) as ts) tbl where cast(ts
  as varchar(10)) = '2018-12-11';
```

The output will have 0 rows.

Affected version:

- CDH 5.15.0, 5.15.1, 5.15.2, 5.16.0, 5.16.1
- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed versions:

- CDH 5.16.2
- CDH 6.2.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-358: Timestamp type-casted to varchar in a binary predicate can produce incorrect result](#)

Incorrect result due to constant evaluation in query with outer join

An `OUTER JOIN` query could omit some expected result rows due to a constant such as `FALSE` in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
  INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
  RIGHT JOIN alltypes a3 ON a1.year = a1.bigint_col;
+-----+
| Explain String |
+-----+
| Estimated Per-Host Requirements: Memory=1.00KB VCores=1 |
| 00:EMPTYSET |
+-----+
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

BST between 1972 and 1995

The calculation of start and end times for the BST (British Summer Time) time zone could be incorrect between 1972 and 1995. Between 1972 and 1995, BST began and ended at 02:00 GMT on the third Sunday in March (or second Sunday when Easter fell on the third) and fourth Sunday in October. For example, both function calls should return 13, but actually return 12, in a query such as:

```
select
  extract(from_utc_timestamp(cast('1970-01-01 12:00:00' as timestamp), 'Europe/London'),
    "hour") summer70start,
  extract(from_utc_timestamp(cast('1970-12-31 12:00:00' as timestamp), 'Europe/London'),
    "hour") summer70end;
```

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.1

Apache Issue: [IMPALA-3082](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a `LIKE` operator is an escaped `\%` character, it does not match a `%` final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: `impala::Coordinator::ValidateCollectionSlots`

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Metadata

These issues affect how Impala interacts with metadata. They cover areas such as the metastore database and the Impala Catalog Server daemon.

Concurrent catalog operations with heavy DDL workloads can cause queries with `SYNC_DDL` to fail fast

When Catalog Server is under a heavy load with concurrent catalog operations of long running DDLs, queries running with the `SYNC_DDL` query option can fail with the following message:

```
ERROR: CatalogException: Couldn't retrieve the catalog topic
version for the SYNC_DDL operation after 3 attempts.The operation has
been successfully executed but its effects may have not been
broadcast to all the coordinators.
```

The catalog operation is actually successful as the change has been committed to HMS and Catalog Server cache, but when Catalog Server notices a longer than expected time for it to broadcast the changes, it fails fast.

The coordinator daemons eventually sync up in the background.

Affected Versions: CDH versions 6.0 and 6.1

Apache Issue: [IMPALA-7961](#) / CDH-76345

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Deviation from Hive behavior: Out of range values float/double values are returned as maximum allowed value of type (Hive returns NULL)

Impala behavior differs from Hive with respect to out of range float/double values. Out of range values are returned as maximum allowed value of type (Hive returns NULL).

Workaround: None

Affected Versions: All CDH 6 versions

Configuration needed for Flume to be compatible with Impala

For compatibility with Impala, the value for the Flume HDFS Sink `hdfs.writeFormat` must be set to `Text`, rather than its default value of `Writable`. The `hdfs.writeFormat` setting must be changed to `Text` before creating data files with Flume; otherwise, those files cannot be read by either Impala or Hive.

Resolution: This information has been requested to be added to the upstream Flume documentation.

Affected Versions: All CDH 6 versions

Cloudera Issue: CDH-13199

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null" , "string"]` instead of `["string" , "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Set limits on size of expression trees

Very deeply nested expressions within queries can exceed internal Impala limits, leading to excessive memory usage.

Workaround: Avoid queries with extremely large expression trees. Setting the query option `disable_codegen=true` may reduce the impact, at a cost of longer query runtime.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4551](#)

Impala does not support running on clusters with federated namespaces

Impala does not support running on clusters with federated namespaces. The `impalad` process will not start on a node running such a filesystem based on the `org.apache.hadoop.fs.viewfs.ViewFs` class.

Workaround: Use standard HDFS on all Impala nodes.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-77](#)

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for `impalad_flags`** to specify the load balancer address with the HiveServer2 port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

Casting scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala Parser issue when using fully qualified table names that start with a number

A fully qualified table name starting with a number could cause a parsing error. In a name such as `db.571_market`, the decimal point followed by digits is interpreted as a floating-point number.

Workaround: Surround each part of the fully qualified name with backticks (```).

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.2.0

Apache Issue: [IMPALA-941](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: CDH 6.0.x

Apache Kafka Known Issues

Potential to bypass transaction and idempotent ACL checks in Apache Kafka

It is possible to manually craft a Produce request which bypasses transaction and idempotent ACL validation. Only authenticated clients with Write permission on the respective topics are able to exploit this vulnerability.

Products affected:

- CDH
- CDK Powered by Apache Kafka

Releases affected:

- CDH versions 6.0.x, 6.1.x, 6.2.0
- CDK versions 3.0.x, 3.1.x, 4.0.x

Users affected: All users who run Kafka in CDH and CDK.

Date/time of detection: September, 2018

Severity (Low/Medium/High): 7.1 (High) ([CVSS:3.0/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:H/A:H](#))

Impact: Attackers can exploit this issue to bypass certain security restrictions to perform unauthorized actions. This can aid in further attacks.

CVE: CVE-2018-17196

Immediate action required: Update to a version of CDH containing the fix.

Addressed in release/refresh/patch:

- CDH 6.2.1, 6.3.2
- CDK 4.1.0

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-378: Potential to bypass transaction and idempotent ACL checks in Apache Kafka](#)

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Kafka May Be Stuck with Under-replicated Partitions after ZooKeeper Session Expires

This problem can occur when your Kafka cluster includes a large number of under-replicated Kafka partitions. One or more broker logs include messages such as the following:

```
[2016-01-17 03:36:00,888] INFO Partition [__samza_checkpoint_event-creation_1,3] on
broker 3: Shrinking ISR for partition [__samza_checkpoint_event-creation_1,3] from 6,5
to 5 (kafka.cluster.Partition)
[2016-01-17 03:36:00,891] INFO Partition [__samza_checkpoint_event-creation_1,3] on
broker 3: Cached zkVersion [66] not equal to that in zookeeper, skip updating ISR
(kafka.cluster.Partition)
```

There will also be an indication of the ZooKeeper session expiring in one or more Kafka broker logs around the same time as the previous errors:

```
INFO zookeeper state changed (Expired) (org.I0Itec.zkclient.ZkClient)
```

The log is typically in `/var/log/kafka` on each host where a Kafka broker is running. The location is set by the property `kafka.log4j.dir` in Cloudera Manager. The log name is `kafka-broker-hostname.log`. In diagnostic bundles, the log is under `logs/hostname-ip-address/`.

Workaround: To move forward after seeing this problem, restart the affected Kafka brokers. You can restart individual brokers from the **Instances** tab in the Kafka service page in Cloudera Manager.



Note: If restarting the brokers does not resolve the problem, you might not have this issue; see [KAFKA-3083 A soft failure in controller may leave a topic partition in an inconsistent state](#). This problem also involves the ZooKeeper session expiring, but will not involve the error message with `Cached zkVersion [XX] not equal to that in zookeeper`.



Note:
To reduce the chances of this issue happening again, do what you can to make sure ZooKeeper sessions do not expire:

- Reduce the potential for long garbage collection pauses by brokers:
 - Use a better garbage collection mechanism in the JVM, such as G1GC. You can do this by adding `-XX:+UseG1GC` in the `broker_java_opts`.
 - Increase broker heap size if it is too small (`broker_max_heap_size`). Be careful that you don't choose a heap size that can cause out-of-memory problems given all the services running on the node.
- Increase the ZooKeeper session timeout configuration on brokers (`zookeeper.session.timeout.ms`), to reduce the likelihood that sessions expire.
- Ensure ZooKeeper itself is well resourced and not overwhelmed so it can respond. For example, it is highly recommended to locate the ZooKeeper log directory on its own disk.

Affected Versions: CDK 1.4.x, 2.0.x, 2.1.x, 2.2.x

Fixed Versions:

- **Full Fix:** CDH 6.1.0
- **Partial Fix:** CDH 6.0.0, Kafka implementations with CDH 6.0.0 are less likely to encounter this issue.

Apache Issue: [KAFKA-2729](#)

Cloudera Issue: CDH-42514

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to `true`.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: KAFKA-2561

Cloudera Issue: None

The Idempotent and Transactional Capabilities of Kafka are Incompatible with Sentry

The idempotent and transactional capabilities of Kafka are not compatible with Sentry. The issue is due to Sentry being unable to handle authorization policies for Kafka transactions. As a result, users cannot use Kafka transaction in combination with Sentry.

Workaround: Use the Sentry super user in applications where idempotent producing is a requirement or disable Sentry.

Affected Versions: CDK 4.0 and later, CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.3.0

Fixed Versions: CDH 6.2.1, 6.3.1

Apache Issue: N/A

Cloudera Issue: CDH-80606

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions: All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

Apache Kudu Known Issues

The following are known bugs and issues in Kudu. Note that this list is not exhaustive, and is meant to communicate only the most important known issues.

Kudu Masters unable to join back after a restart

In a multi master Kudu environment, if a master is restarted or goes offline for a few minutes, it can occasionally have trouble joining the cluster on startup. For example, if this happens in case of three kudu masters, and one of the other two masters is stopped or dies during this time, then the overall Kudu cluster is down because the majority of the masters are not running.

This issue is resolved by the [KUDU-2748](#) upstream JIRA.

Products affected: Apache Kudu

Affected version:

- CDH 5.14.0, 5.14.2, 5.14.4
- CDH 5.15.0, 5.15.1, 5.15.2
- CDH 5.16.1, 5.16.2
- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0, 6.2.1

Fixed version:

- CDH 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-442: Kudu Masters unable to join back after a restart](#)

Inconsistent rows returned from queries in Kudu

Due to KUDU-2463, upon restarting Kudu, inconsistent rows may be returned from tables that have not recently been written to, resulting in any of the following:

- multiple rows for the same key being returned
- deleted data being returned
- inconsistent results consistently being returned for the same query

If this happens, you have two options to resolve the conflicts: write to the affected Kudu partitions by:

- re-deleting the known and deleted data
- upserting the most up-to-date version of affected rows.

Products affected: Apache Kudu

Affected version:

- CDH 5.12.2, 5.13.3, 5.14.4, 5.15.1, 5.16.1
- CDH 6.0.1, 6.1.0, 6.1.1

Fixed version:

- CDH 5.16.2
- CDH 6.2.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-353: Inconsistent rows returned from queries in Kudu](#)

CFile Checksum Failure Causes Queries to Fail

When a CFile checksum fails, for example, due to a underlying disk corruption, queries against the replica will fail with an error message, such as this:

```
Unable to advance iterator: Corruption: checksum error on CFile block
```

Workaround: Remove the corrupted replica from the tablet's Raft configuration. See [Kudu Troubleshooting Guide](#) for the detailed steps.

Affected Versions: CDH 6.0.x and lower

Apache Issue: [KUDU-2469](#)

C++ Client Fails to Re-acquire Authentication Token in Multi-master Clusters

A security-related issue can cause Impala queries to start failing on busy clusters in the following scenario:

- The cluster runs with the `--rpc_authentication` set as `optional` or `required`. The default is `optional`. Secure clusters use `required`.
- The cluster is using multiple masters.
- Impala queries happen frequently enough that the leader master connection to some `impalad` isn't idle-closed (more than 1 query per 65 seconds).
- The connection stays alive for longer than the authentication token timeout (1 week by default).
- A master leadership change occurs after the authentication token expiration.

Impala queries will start failing with errors in the `impalad` logs like:

```
I0904 13:53:08.748968 95857 client-internal.cc:283] Unable to determine the new leader
Master: Not authorized: Client connection negotiation failed: client connection to
10.164.44.13:7051: FATAL_INVALID_AUTHENTICATION_TOKEN: Not authorized: authentication
token expired
I0904 13:53:10.389009 95861 status.cc:125] Unable to open Kudu table: Timed out:
GetTableSchema timed out after deadline expired
@ 0x95b1e9 impala::Status::Status()
@ 0xff22d4 impala::KuduScanNodeBase::Open()
@ 0xff101e impala::KuduScanNode::Open()
@ 0xb73ced impala::FragmentInstanceState::Open()
@ 0xb7532b impala::FragmentInstanceState::Exec()
@ 0xb64ae8 impala::QueryState::ExecFInstance()
@ 0xd15193 impala::Thread::SuperviseThread()
@ 0xd158d4 boost::detail::thread_data<>::run()
@ 0x129188a (unknown)
@ 0x7f717ceade25 start_thread
@ 0x7f717cbdb34d __clone
```

Impala shell queries will fail with a message like:

```
Unable to open Kudu table: Timed out: GetTableSchema timed out after deadline expired
```

Workaround:

- Restart the affected Impala Daemons. Restarting a daemon ensures the problem will not reoccur for at least the authentication token lifetime, which defaults to one week.
- Increase the authentication token lifetime (`--authn_token_validity_seconds`). Beware that raising this lifetime increases the window of vulnerability of the cluster if a client is compromised. It is recommended that you keep the token lifetime at one month maximum for a secure cluster. For unsecured clusters, a longer token lifetime is acceptable, and a 3 month lifetime is recommended.

Affected Versions: From CDH 5.11 through CDH 6.0.1

Apache Issue: [KUDU-2580](#)

Timeout Possible with Log Force Synchronization Option

If the Kudu master is configured with the `-log_force_fsync_all` option, tablet servers and clients will experience frequent timeouts, and the cluster may become unusable.

Affected Versions: All CDH 6 versions

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Fault Tolerant Scan Memory Issue

Unlike regular scans, fault tolerant scans will allocate all required memory when the scan begins rather than as it progresses. This can be significant for big tablets. Moreover, this memory usage isn't counted towards the tablet server's overall memory limit, raising the likelihood of the tablet server being out-of-memory killed by the kernel.

Affected Versions: CDH 6.2 / Kudu 1.9 and lower

Apache Issue: [KUDU-2466](#)

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |

| Field | Usage Notes |
|----------------------------------|---|
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

External ID of MapReduce action not filled properly and failing MR job treated as SUCCEEDED

When a MapReduce action is launched from Oozie, the external ID field is not filled properly. It gets populated with the YARN ID of the LauncherAM, not with the ID of the actual MR job. If the MR job is submitted successfully and then fails, it will be treated as a successfully executed action.

Affected Versions: CDH 6.0.0 and higher

Fixed Version: CDH 6.1.0 and higher

Apache Issue: [OOZIE-3298](#)

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in Parquet.

Apache Pig Known Issues

There are no known issues in this release.

Cloudera Search Known Issues

The current release includes the following known limitations:

Default Solr core names cannot be changed (limitation)

Although it is technically possible to give user-defined Solr core names during core creation, it is to be avoided in the context of Cloudera Search. Cloudera Manager expects core names in the default "collection_shardX_replicaY" format. Altering core names results in Cloudera Manager being unable to fetch Solr metrics for the given core and this, eventually, may corrupt data collection for co-located core, or even shard and server level charts.

Processing UpdateRequest with delegation token throws NullPointerException

When using the Spark Crunch Indexer or another client application which utilizes the SolrJ API to send Solr Update requests with delegation token authentication, the server side processing of the request might fail with a NullPointerException.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Apache Issue: SOLR-13921

Cloudera Issue: CDH-82599

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

HBase Lily indexer might fail to write role log files

In certain scenarios the HBase Lily Indexer (Key-Value Store Indexer) fails to write its role log files.

Workaround: None

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82342

Adding a new indexer instance to HBase Lily Indexer fails with GSSException

When Kerberos authentication is enabled and adding a new indexer instance to HBase Lily Indexer (Key-Value Store Indexer), the authentication might fail when Lily is communicating to the HBase Master process, throwing a similar Exception:

```
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid credentials provided (Mechanism level: Failed to find any Kerberos tgt)]
```

Workaround: Ensure that the Lily indexer has a Sentry dependency configured by following these steps:

1. Go to **Cloudera Manager > Key-Value Store indexer > Configuration**.
2. Make sure the **Sentry Service** configuration option points to a Sentry service instance instead of **none**.

The workaround does not require defining any Sentry roles or privileges, it is just to trigger a code execution path which will authenticate the HBase service user.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82566

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with CrunchIndexerTool, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the MapReduceIndexerTool nor the HBaseMapReduceIndexerTool

The MapReduceIndexerTool and the HBaseMapReduceIndexerTool can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the MapReduceIndexerTool or HBaseMapReduceIndexerTool. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the “Browse” and “Spell” Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irrecoverably corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool` multiple times may produce duplicate entries in a collection.

Repeatedly running the `MapReduceIndexerTool` on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the `HBaseMapReduceIndexerTool` unless it is run with more than zero reducers.

Workaround: To avoid this issue, use `HBaseMapReduceIndexerTool` with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139

Apache Sentry Known Issues

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

When granting privileges, a single transaction per grant causes long delays

Sentry takes a long time to grant or revoke a large number of column-level privileges that are requested in a single statement. For example if you execute the following command:

```
GRANT SELECT(col1, col2, ...) ON TABLE table1;
```

Sentry applies the grants to each column separately and the refresh process causes long delays.

Workaround: Split the grant statement up into smaller chunks. This prevents the refresh process from causing delays.

Affected Versions:

- CDH: 5.14.4

- CDH: 5.15.1
- CDH: 5.16.0
- CDH: 6.1.0

Fixed Versions:

- CDH 5.16.1 and above
- CDH 6.2.0 and above

Cloudera Issue: CDH-74982

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.**Affected Versions:**

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694**GRANT/REVOKE operations could fail if there are too many concurrent requests**

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.**Affected Versions:** CDH 5.13.0 and above**Apache Issue:** [SENTRY-1855](#)**Cloudera Issue:** CDH-56553**Creating large set of Sentry roles results in performance problems**

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.**Affected Versions:** CDH 5.13.0 and above**Cloudera Issue:** CDH-59010

Users can't track jobs with Hive and Sentry

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above**Cloudera Issue:** CDH-22890

Column-level privileges are not supported on Hive Metastore views

GRANT and REVOKE for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

SELECT privilege on all columns does not equate to SELECT privilege on table

Users who have been explicitly granted the SELECT privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as `SELECT COUNT (1)` or `SELECT COUNT (*)` will not work even if you have the SELECT privilege on all columns.

There is one exception to this. The `SELECT * FROM TABLE` command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The EXPLAIN SELECT operation works without table or column-level privileges

Users are able to run the `EXPLAIN SELECT` operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types Server and URI are not supported in `SHOW GRANT ROLE roleName on OBJECT objectName`

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|--------------------------|---------------------------------|
| hdfs://absolute/path/ | hdfs://relative/path |
| s3a://bucketname/ | s3a://bucketname |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

Shuffle+Repartition on a DataFrame could lead to incorrect answers

When a repartition follows a shuffle, the assignment of rows to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input rows than the original computation. As a result, some rows can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2

- CDS 2.2.0 release 1, release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-3: Shuffle+Repartition on a DataFrame could lead to incorrect answers](#)

Shuffle+Repartition on an RDD could lead to incorrect answers

When a repartition follows a shuffle, the assignment of records to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input records than the original computation. As a result, some records can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2, release 3
- CDS 2.2.0 release 1, release 2, release 3
- CDS 2.3.0 release 1, release 2, release 3

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 4
- CDS 2.2.0 release 4
- CDS 2.3.0 release 4

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-4: Shuffle+Repartition on an RDD could lead to incorrect answers](#)

PySpark broadcast variables fail when disk encryption is enabled

When disk encryption is enabled, PySpark broadcast variables fail with the following stack trace:

```
Traceback (most recent call last): File "broadcast.py", line 37, in <module>
words_new.value File "/pyspark.zip/pyspark/broadcast.py", line 137, in value
File "pyspark.zip/pyspark/broadcast.py", line 122, in load_from_path File
"pyspark.zip/pyspark/broadcast.py", line 128, in load EOFError: Ran out of input
```

Workaround: None

Affected Versions: CDH 6.0.1, CDH 6.1.0

Fixed Versions: CDH 6.1.1, CDH 6.2.0

Apache Issue: [SPARK-26201](#)

Cloudera Issue: CDH-76055

Spark Streaming jobs loop if missing Kafka topic

Spark jobs can loop endlessly if the Kafka topic is deleted while a Kafka streaming job (which uses KafkaSource) is in progress.

Workaround: Stop a job before deleting a Kafka topic.

Affected Versions: All

Cloudera Issue: CDH-57903, CDH-64513

Spark SQL does not respect size limit for the varchar type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Spark SQL does not respect Sentry ACLs when communicating with Hive metastore

Even if user is configured via Sentry to not have read permission to a Hive table, a Spark SQL job running as that user can still read the table's metadata directly from the Hive metastore. **Cloudera Issue:** CDH-76468

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's `client` mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

Long-running apps on a secure cluster might fail if driver is restarted

If you submit a long-running app on a secure cluster using the `--principal` and `--keytab` options in cluster mode, and a failure causes the driver to restart after 7 days (the default maximum HDFS delegation token lifetime), the new driver fails with an error similar to the following:

```
Exception in thread "main"
org.apache.hadoop.ipc.RemoteException(org.apache.hadoop.security.token.SecretManager$InvalidToken) :
token <token_info> can't be found in cache
```

Workaround: None

Affected Versions: CDH 6.0

Apache Issue: [SPARK-23361](#)

Cloudera Issue: CDH-64865

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

Apache Sqoop Known Issues

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (doc import + `--as-parquetfile`) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (sqoop import --as-parquetfile) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \$CONDITIONS" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/5dbcac42-5d69-4e46-88c2-17dbedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a `--target-dir` which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

ZooKeeper JMX did not support TLS when managed by Cloudera Manager

Technical Service Bulletin 2019-310 (TSB)

The ZooKeeper service optionally exposes a JMX port used for reporting and metrics. By default, Cloudera Manager enables this port, but prior to Cloudera Manager 6.1.0, it did not support mutual TLS authentication on this connection. While JMX has a password-based authentication mechanism that Cloudera Manager enables by default, weaknesses have been found in the authentication mechanism, and Oracle now advises JMX connections to enable mutual TLS authentication in addition to password-based authentication. A successful attack may leak data, cause denial of service, or even allow arbitrary code execution on the Java process that exposes a JMX port. Beginning in Cloudera Manager 6.1.0, it is possible to configure mutual TLS authentication on ZooKeeper's JMX port.

Products affected: ZooKeeper

Releases affected: Cloudera Manager 6.1.0 and lower, Cloudera Manager 5.16 and lower

Users affected: All

Date/time of detection: June 7, 2018

Severity (Low/Medium/High): 9.8 High ([CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H](#))

Impact: Remote code execution

CVE: CVE-2018-11744

Immediate action required: Upgrade to Cloudera Manager 6.1.0 and enable TLS for the ZooKeeper JMX port by turning on the configuration settings “Enable TLS/SSL for ZooKeeper JMX” and “Enable TLS client authentication for JMX port” on the ZooKeeper service and configuring the appropriate TLS settings. Alternatively, disable the ZooKeeper JMX port via the configuration setting “Enable JMX Agent” on the ZooKeeper service.



Note: Disabling the ZooKeeper JMX port prevents Cloudera Manager from performing health checks on the ZooKeeper service.

Addressed in release/refresh/patch: Cloudera Manager 6.1.0

CDH 6.0.0 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for CDH 6.0.0:

New Features in CDH 6.0.0

See below for new features in CDH 6.0.0, grouped by component:

Apache Accumulo

Running Apache Accumulo on top of a CDH 6.0.0 cluster is not currently supported. If you try to upgrade to CDH 6.0.0 you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Apache Avro

The following are new features from the upstream release Avro 1.8.2 that are available in the CDH 6.0.0 release. For more information on Avro 1.8.2, see [Apache Avro 1.8.2 Documentation](#).

- [AVRO-834](#): Data File corruption recovery tool
- [AVRO-1502](#): Avro objects should implement Serializable
- [AVRO-1684](#): Add date, time, and timestamp to specific object model classes
- [AVRO-1402](#): Support for DECIMAL type
- [AVRO-1439](#): MultipleInputs equivalent for Avro MR

Apache Crunch

There are no notable new features in this release.

Apache Flume

Apache Flume contains the following new features:

- CDH 6.0.0 uses HBase 2.0.
- HBaseSink is replaced with HBase2Sink. For more information about Flume HBase2Sink changes in CDH 6.0.0, see [Incompatible Changes in CDH 6.0.0](#) on page 1243.

Serializer Class Names

The HBase serializer classes have been renamed to change `Hbase` to `HBase` and to include the version number.

The following class names have been updated:

| New HBase2 Name | Legacy Name |
|--|--|
| org.apache.flume.sink.hbase2.HBase2EventSerializer | org.apache.flume.sink.hbase.HbaseEventSerializer |
| org.apache.flume.sink.hbase2.SimpleHBase2EventSerializer | org.apache.flume.sink.hbase.SimpleHbaseEventSerializer |
| org.apache.flume.sink.hbase2.RegexHBase2EventSerializer | org.apache.flume.sink.hbase.RegexHbaseEventSerializer |
| org.apache.flume.sink.hbase2.HBase2Sink | org.apache.flume.sink.hbase.HBaseSink |

In CDH, the legacy names have been kept for backward compatibility and are aliases to the new names. Existing configurations will work without changes, but new configurations should use the HBase 2.x serializer class names. In

the upstream Apache Flume version, the legacy names refer to HBase 1.x classes and the new names refer to HBase 2.x classes.

For example, the following configuration contains the new class name and will use HBase2Sink for CDH and upstream Apache Flume:

```
host1.sinks.sink1.type = org.apache.flume.sink.hbase.HBase2Sink # or hbase2
host1.sinks.sink1.serializer = org.apache.flume.sink.hbase.SimpleHBase2EventSerializer
```

However, the following configuration, which contains the legacy name, will use HBase2Sink for CDH, but will use the old HBaseSink for upstream Apache Flume:

```
host1.sinks.sink1.type = org.apache.flume.sink.hbase.HBaseSink # or hbase
host1.sinks.sink1.serializer = org.apache.flume.sink.hbase.SimpleHBaseEventSerializer
```

Apache Hadoop

Hadoop Common

As part of the Hadoop 3 rebase, CDH 6.0.0 supports the updated version of the Hadoop shell discussed in [HADOOP-9902](#). This introduces several incompatible changes as noted [HADOOP-9902](#). Customers using the Hadoop shell may need to make adjustments to their scripts.

For more information, see [HADOOP-9902](#) and the Apache Hadoop shell documentation.

HDFS

There are no notable new features in this release.

MapReduce

There are no notable new features in this release.

YARN

YARN JARs

YARN jobs running MapReduce2 are now configured to read MapReduce JARs from HDFS instead of from local disk. This makes jobs more robust during rolling upgrades when the local binaries are modified while a job is executing. Clusters created in or upgrading to CDH 6.0 will use this new behavior.

Apache HBase

CDH 6.0.0 includes most of the features introduced in HBase 2.0 and ensures that they are fully compatible with other CDH components. However, HBase 2.0 may include features that are not supported by Cloudera as part of CDH 6.0.0.

Supportability

CDH 6.0.0 contains a significant number of enhancements designed to make HBase easier to configure and to support.

Assignment Manager

CDH 6.0.0 has some significant architectural changes to the assignment manager. The assignment manager is a component in the HBase master that manages region to region server assignment and ensures that any one region replica is assigned to just one region server. The overall goal is to make HBase more resilient through providing a unified place within HBase to handle some tricky scenarios related to region assignment including:

- Multi step procedures with rollback and rollforward capabilities in case of failure.
- Notifications across multiple region servers.
- Coordination of long-running and/or computationally expensive procedures.
- Procedures that require precise coordination across multiple machines (e.g., snapshots).

Note that HBase is read-only in CDH 6.0.0. [HBASE-18792](#) is listed in the CDH HBase [Incompatible Changes](#).

Replication

Replication peers can be defined for entire namespaces instead of for each individual table. For clusters with hundreds or thousands of tables defining replication configuration settings for each table is cumbersome and error prone and being able to define configuration at the namespace level is a significant improvement.

- [HBASE-16447](#): Replication by namespaces config in peer; Set a namespace in peer config means that all tables in this namespace will be replicated.
- [HBASE-19293](#): Support adding a new replication peer in disabled state.
- [HBASE-17314](#): (Replication) Limit total buffered size for all replication sources - Add a conf "replication.total.buffer.quota" to limit total size of buffered entries in all replication peers. It will prevent server getting OOM if there are many peers. Default value is 256MB.
- [HBASE-17296](#): Peer level throttling for replication - Add the bandwidth upper limit to ReplicationPeerConfig and a new shell cmd set_peer_bandwidth to update the bandwidth in need.
- [HBASE-16466](#): HBase snapshots supported by VerifyReplication tool - verifyrep can now compare source table snapshot against peer table snapshot which reduces load on RS by reading data from HDFS directly using Snapshot scanners.

Balancer Improvements

Periodically, the HBase master will look at load across region servers and attempt to balance it out by reassigning regions. The handling of this cluster maintenance has improved in CDH 6.0.0:

- [HBASE-18164](#): Much faster stochastic load balancer; Improvements in locality cost function and candidate generator
- [HBASE-17178](#): Region balancing throttling - New config to protect availability of cluster by specifying maximum number of regions (in percentage) that can be in transition at any time.
- [HBASE-14309](#): Added boolean parameter, force, to 'balancer' command so that admin can force region balancing even when there is region (other than hbase:meta) in transition.

Shell

HBase's command line shell has been enhanced with several new commands that allow for easier cluster administration. New commands allow for administrators to better understand the current compaction state of a table and to clear the compaction queue if needed. There is also a new command to display metadata associated with a region.

New shell commands:

- [HBASE-17928](#): Clear compaction queues : clear_compaction_queues.
- [HBASE-16147](#): Get compaction state of a table : compaction_state.
- [HBASE-14925](#): Displaying the table's region info : list_regions.

Major Compaction Tool

HBase deployments with a heavy write workload often disable HBase's automatic handling of major compactions in order to reduce IO during peak cluster load. HBase now ships a tool to make it easier for operators who then have to ensure major compactions can happen during off-hours.

- [HBASE-19528](#): Major Compaction Tool - Tool allows you to compact a cluster with given concurrency of regionservers compacting at a given time.

Metrics

In CDH 6.0.0, there are a significant number of new metrics available. Additionally, client side metrics are now collected by default. Some examples include:

- Block cache metrics for the primary region replica instead of lumping metrics for the primary, secondary, and tertiary replicas.
- Per table metrics that describe the memstore, storefiles, and region size.
- Metrics that track assignment manager responsibilities like merging and splitting regions, assigning and unassigning regions to region servers, and state information that exists at the time in the event of a server crash.
- Latency metrics for for checkAndPut, checkAndDelete, putBatch and deleteBatch.
- Counts for hedgedReads and hedgedWrites Latency histograms on a per-region basis.
- Metrics for tracking coprocessor usage.

New metrics:

- [HBASE-14314](#): 3 new Block cache metrics for primary region replica.
- [HBASE-15671](#): Per-table metrics on memstore, storefile and regionsize.
- [HBASE-15518](#): Per-table metrics aggregated from per-region metrics in region server metrics.
- [HBASE-16549](#): Few AM metrics.
- [HBASE-18374](#): Latency metrics for checkAndPut, checkAndDelete, putBatch and deleteBatch.
- [HBASE-12220](#): hedgedReads and hedgedReadWins counts.
- [HBASE-19285](#): Per-RegionServer table latency histograms have been returned to HBase.

Metrics changes:

- [HBASE-15943](#): New "Process Metrics" tab that dumps mbean -- mostly jvm -- metrics.
- [HBASE-14583](#): Client side metrics are enabled by default - Sets the default value of hbase.client.metrics.enable=true.

Spark 2 Integration

Spark integration for accessing data in HBase has been updated to work with the Spark 2 version that ships with CDH 6.x. It should provide equivalent functionality to the CDH 5.x integration with Spark 1.6.

Improved Performance

CDH 6.0.0 has an extensive set of enhancements aimed at improving overall performance. The following sections describe some of the improvements, but this list is not exhaustive.

Off-Heap Write Cache

CDH 6.0.0 includes the ability to define an off-heap write cache. Off-heap caches allow HBase to manage memory directly instead of delegating memory management to java. HBase has much more context on how to safely reclaim memory it's using compared to the java garbage collection process which allows HBase to more efficiently manage memory usage. Off-heap caching allows HBase to use more memory than would be practical if delegating the responsibility to java where "stop the world" garbage collection can cause large spikes in latency. One consequence of allowing significantly more write side cache memory through an off-heap cache is an increase in density of regions per region server.

Off-Heap Read Path

It is now possible to configure HBase so that data remains off-heap along the entire read path, avoiding copies of the data onto the java heap. With this feature enabled cached data will have a similar latency to on-heap caching in earlier versions of HBase but without putting GC pressure on the JVM. For more information on configuring and running a deployment with an off-heap read path see the Apache HBase documentation reference guide section on [Offheap Read Path](#).

Improved Cleaning of Old Files

CDH 6.0.0 has an option to allow HFileCleaner to use multiple threads. HFileCleaner is a background process that removes files containing dereferenced data. This new configuration is useful when a system is under substantial write load to ensure that clean up operations complete in a timely manner to prevent the archive directory from ballooning in size.

- [HBASE-18083](#): Configure HFileCleaner to use multiple threads for large/small (archived) hfile cleaning.
- [HBASE-17215](#): Separate small/large file delete threads in HFileCleaner to accelerate archived hfile cleanup speed.
- [HBASE-18309](#): CleanerChore (for cleaning up HFiles and old log files) now supports multiple threads.

Streaming Scan API

An additional performance enhancement in CDH 6.0.0 is the introduction of a "streaming scan" API. This API can improve the performance of intensive workloads by allowing multiple chunks of data to be prefetched concurrently. Previously, prefetch operations were synchronous, i.e., they required the previous prefetch operation to complete. Synchronous prefetches can result in a "stop-and-wait" access pattern where an application has finished processing its previous chunk of data and is now waiting for the next chunk of data to arrive. Prefetching a second chunk of data before the first is entirely processed helps eliminate the "stop-and-wait" access pattern.

- [HBASE-13071](#): A pipelined scan API for speeding up applications that combine massive data traversal with compute-intensive processing.

New RPC Server

A new RPC server based on Netty4 is included in CDH 6.0.0. This RPC server option can increase the performance of workloads with large amounts of random reads and writes. This new RPC server option is on by default.

- [HBASE-17263](#), [HBASE-19323](#): NettyRpcServer- A new RPC server based on Netty4 which can improve random read (get) performance. It is also the default RPC server replacing SimpleRpcServer.
- [HBASE-15136](#): New RPC scheduler - CoDel - The purpose is to prevent long standing call queues caused by discrepancy between request rate and available throughput, caused by kernel/disk IO/networking stalls.

Note:

- [HBASE-15212](#): New configuration to limit RPC request size to protect the server against very large incoming RPC requests. All requests larger than this size will be immediately rejected before allocating any resources.
These changes should eliminate a number of issues in earlier versions of HBase commonly referred to as "regions stuck in transition."
- Split/Merge have moved to the Master; it runs them now. RegionServer hooks are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-16414](#): Improve performance for RPC encryption with Apache Common Crypto.
- [HBASE-16023](#): Fastpath for the FIFO rpcscheduler - Will shine best when high random read workload (YCSB workload for instance).
- [HBASE-15994](#): Allow selection of RpcSchedulers.

Improved MapReduce over Snapshots

HBase provides users the ability to run map/reduce jobs over HBase snapshots. Snapshots are immutable, and by running map/reduce jobs directly against them clients can avoid performance overhead associated with going through the region servers. In prior HBase versions exactly one map task per region was created. In CDH 6.0.0, the ability to assign multiple mappers to a particular region is possible. This change can further improve the performance of map/reduce jobs over HBase snapshots and eliminates the need to design schemas optimized for the prior limitation.

- [HBASE-18090](#): TableSnapshotInputFormat now supports multiple mappers per region.

Heterogeneous Storage Management

HDFS has supported heterogeneous storage management (HSM) for several releases. This feature allows users to specify that certain HDFS files or directories should reside on specific physical media. In CDH 6.0.0, users can do something very similar at the logical, column-family level. Currently supported storage policies include ALL_SSD/ONE_SSD/HOT/WARM/COLD.

Note that HBase has supported setting storage policies on WALs since CDH 5.7.

- [HBASE-14061](#): Column Family-level Storage Policy - Currently supported storage policies include ALL_SSD/ONE_SSD/HOT/WARM/COLD
- [HBASE-15172](#): Support setting storage policy in bulkload

Client Robustness Against Slow Region Servers

Clients can now optionally elect to handle slow region servers in application code. By setting the configuration value for `hbase.client.perserver.requests.threshold` an application can control how many concurrent requests to a single region server are allowed. After reaching this threshold the HBase client code will throw a `ServerTooBusyException` rather than attempting to establish an additional connection. If an HBase cluster has a small number of region servers that are having trouble this will allow an application to react in some way rather than simply waiting for the server to eventually respond. Because using this feature requires application side changes to handle retry logic you must opt-in to it; by default `hbase.client.perserver.requests.threshold` is set to practically unlimited.

- [HBASE-16388](#): Prevent client threads being blocked by only one slow region server - Added a new configuration to limit the max number of concurrent request to one region server.

Maven Archetypes

- [HBASE-14877](#): Maven archetype: client application - Introduces a new infrastructure for creation and maintenance of Maven archetypes in the context of the hbase project, and it also introduces the first archetype, which end-users may utilize to generate a simple hbase-client dependent project.

JIRAs

CDH 6.0.0 contains the following new features:

- [HBASE-18519](#): Use builder pattern to create cell
- [HBASE-13259](#): mmap() based BucketCache IOEngine - Can be configured using the property `hbase.bucketcache.ioengine`.
- [HBASE-14247](#): Separate the old WALs into different regionserver directories - Disabled by default. Can be enabled by using the configuration `hbase.separate.oldlogdir.by.regionserver`.
- [HBASE-12706](#): Support multiple port numbers in ZK quorum string - `hbase.zookeeper.quorum` configuration now allows servers together with client ports consistent with the way Zookeeper java client accepts the quorum string. In this case, using `hbase.zookeeper.clientPort` is not needed. eg. `hbase.zookeeper.quorum=myserver1:2181,myserver2:20000,myserver3:31111`.
- [HBASE-15806](#): A coprocessor service based export tool - `org.apache.hadoop.hbase.coprocessor.Export`.
- [HBASE-15536](#): Changed default WALProvider to AsyncFSWALProvider.
- [HBASE-18533](#): New configurations for BucketCache.
- [HBASE-17583](#): Add inclusive/exclusive support for `startRow` and `endRow` of scan for sync client.
- [HBASE-16672](#): Added option for bulk load to always copy hfile(s) instead of renaming.
- [HBASE-19336](#): Two new RSGroup commands to operate on namespace level - `move_namespaces_rsgroup` and `move_servers_namespaces_rsgroup`.
- [HBASE-17437](#): Support WAL directory outside of the root directory - Useful for cloud deployments because it allows keeping WALs on a faster network drive than hfiles, giving better latency and throughput.
- [HBASE-16213](#): New data block encoding for fast random gets.
- [HBASE-15265](#): Asynchronous WALs.
- [HBASE-14969](#): Throughput controller for flush - Added means of throttling flush throughput. By default there is no limit (`NoLimitThroughputController`). An alternative controller, `PressureAwareFlushThroughputController`, allows specifying throughput bounds. See `PressureAwareFlushThroughputController.java` class for detail.
- [HBASE-15187](#): Added CSRF prevention filter to REST gateway - Disabled by default, can be enabled by using the configuration `hbase.rest.csrf.enabled`.
- [HBASE-15711](#): Added client side property to provide more logging details for batch errors.
- [HBASE-15511](#): New `ClusterStatus.Option` field to limit the scope of response.
- [HBASE-15576](#): Scanning cursor to prevent blocking long time on `ResultScanner.next()`.
- [HBASE-15921](#): New AsyncTable client.
- [HBASE-11344](#): Hide row keys from the web UIs
- [HBASE-3462](#): UI pages for splitting/merging now operate by taking a row key prefix from the user rather than a full region name.
- [HBASE-8410](#): Basic quota support for namespaces - Namespace auditor provides basic quota support for namespaces in terms of number of tables and number of regions.

Apache Hive / Hive on Spark / HCatalog

Apache Hive

See below for the new features added to Hive in CDH 6.0.0:

- [Query Vectorization Support for Parquet Files](#) on page 1223
- [Support for UNION DISTINCT](#) on page 1223
- [Support for NULLS FIRST/NULLS LAST](#) on page 1223
- [Added Support for Windowing and Analytics Functions](#) on page 1223
- [Table or Partition Statistics Editing](#) on page 1224
- [SHOW CREATE DATABASE Support](#) on page 1224

- [Support for Multiple-Column IN Clause](#) on page 1224
- [Support for More Hive Functions](#) on page 1224

Query Vectorization Support for Parquet Files

By default, the Hive query execution engine processes one row of a table at a time. The single row of data goes through all the operators in the query before the next row is processed, resulting in very inefficient CPU usage. In vectorized query execution, data rows are batched together and represented as a set of column vectors. The query engine then processes these vectors of columns, which greatly reduces CPU usage for typical query operations like scans, filters, aggregates, and joins.

Hive query vectorization is enabled by setting the `hive.vectorized.execution.enabled` property to `true`. In both CDH 5 and CDH 6, this property is set to `true` by default. But in CDH 5, vectorized query execution in Hive is only possible on ORC-formatted tables, which Cloudera recommends that you do not use for overall compatibility with the CDH platform. Instead, Cloudera recommends that you use tables in the Parquet format because all CDH components support this format and can be consumed by all CDH components. In CDH 6, query vectorization is supported for Parquet tables in Hive.

For more information, see [Enabling Query Vectorization](#) and [Apache Parquet Tables with Hive in CDH](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
 - The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.
- **Behavior in CDH 6:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
 - The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

Support for NULLS FIRST/NULLS LAST

Support has been added for `NULLS FIRST` and `NULLS LAST` options. These options can be used to determine whether null values appear before or after non-null data values when the `ORDER BY` clause is used. Hive follows the [SQL:2003 standard](#) for this feature, but the SQL standard does not specify the behavior by default. By default in Hive, null values are sorted as if lower than non-null values. This means that `NULLS FIRST` is the default behavior for `ASC` order, and `NULLS LAST` is the default behavior for `DESC` order. See [Syntax of Order By](#) on the Apache Hive wiki and [HIVE-12994](#) for further details.

Here are some usage examples:

```
SELECT x.* FROM table1 x ORDER BY a ASC NULLS FIRST;
SELECT x.* FROM table1 x ORDER BY a ASC NULLS LAST;
```

Added Support for Windowing and Analytics Functions

Support for the following has been added to CDH 6.0:

- Using `DISTINCT` with windowing functions. See [HIVE-9534](#) for details.
- Support for `ORDER BY` and a windowing clause when `DISTINCT` is used in a partitioning clause. See [HIVE-13453](#) for details.
- Support to reference aggregate functions within the `OVER` clause. See [HIVE-13475](#) for details.

For further details, see the [Apache Language Manual on Windowing and Analytics](#).

Table or Partition Statistics Editing

Support has been added for editing the statistics information that is stored for a table or a partition. For example, you can run the following statement to set the number of rows for a table to 1000:

```
ALTER TABLE table1 UPDATE STATISTICS SET ('numRows'='1000');
```

For more information, see [HIVE-12730](#) and the [Apache wiki](#).

SHOW CREATE DATABASE Support

Support has been added for the `SHOW CREATE DATABASE` command, which prints out the DDL statement that was used to create a database:

```
SHOW CREATE DATABASE databasel;
```

For more information, see [HIVE-11706](#)

Support for Multiple-Column IN Clause

Support has been added so that the `IN` clause in queries operates over multiple column references. The new syntax is boldfaced in the following example:

```
CREATE TABLE test (col1 int, col2 int);
INSERT INTO TABLE test VALUES (1, 1), (1, 2), (2, 1), (2, 2);
SELECT * FROM test;
+-----+-----+
| test.col1 | test.col2 |
+-----+-----+
| 1         | 1         |
| 1         | 2         |
| 2         | 1         |
| 2         | 2         |
+-----+-----+
SELECT * FROM test WHERE (col1, col2) IN ((1, 1));
+-----+-----+
| test.col1 | test.col2 |
+-----+-----+
| 1         | 1         |
+-----+-----+
```

For more information, see [HIVE-11600](#)

Support for More Hive Functions

Support has been added for the following Hive UDFs:

| | | |
|-------------|---------------|--------------|
| bround | chr | factorial |
| floor_day | floor_hours | floor_minute |
| floor_month | floor_quarter | floor_second |
| floor_week | floor_year | grouping |

| | | |
|--------------------|-------------------|------------------|
| mask | mask_first_n | mask_hash |
| mask_last_n | mask_show_first_n | mask_show_last_n |
| quarter | replace | sha1 |
| sha | shiftleft | shiftright |
| shiftrightunsigned | substring_index | |

All built-in Hive functions can be listed with the command `SHOW FUNCTIONS;` and a short description that explains what a function does is returned with the command `DESCRIBE <function_name>;` For more information about Hive functions, see the [Apache wiki](#) and [Managing UDFs](#) in the Cloudera enterprise documentation.

Hive on Spark

See below for the new features added to Hive on Spark in CDH 6.0:

- [Dynamic RDD Caching for Hive on Spark](#) on page 1225
- [Optimized Hash Tables Enabled for Hive on Spark](#) on page 1225

Dynamic RDD Caching for Hive on Spark

An optimization has been added to Hive on Spark that enables automatic caching of reused RDDs (Resilient Distributed Datasets). This optimization can improve query performance when the query or sub-query must scan a table multiple times. For example, [TPC-DS](#) query 39 is a query that requires multiple table scans. This optimization is disabled by default in CDH 6.0, but can be enabled by setting the `hive.combine.equivalent.work.optimization` property to `true` in the `hive-site.xml` file.



Important: While dynamic RDD caching can improve performance, using Spark's RDD cache may add additional memory pressure to Spark executors. This might increase the chance that a Spark executor runs out of memory and crashes.

To configure this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the Configuration tab.
3. Search for the **HiveServer2 Advanced Configuration Snippet (Safety Valve) for hive-site.xml**.
4. Enter the following property configuration information:
 - **Name:** `hive.combine.equivalent.work.optimization`
 - **Value:** `true`
 - **Description:** Enables dynamic RDD caching for HoS

To disable this configuration, set the **Value** field to `false`.

To set this configuration property in the XML editor, enter the following code:

```
<property>
  <name>hive.combine.equivalent.work.optimization</name>
  <value>true</value>
  <description>Disables dynamic RDD caching for HoS</description>
</property>
```

5. Click **Save Changes**, and restart the service.

For more information see [HIVE-10844](#) and [HIVE-10550](#).

Optimized Hash Tables Enabled for Hive on Spark

Support has been added for optimized hash tables for Hive on Spark to reduce memory overhead. This feature is enabled by default in CDH 6.0, but can be disabled by setting the `hive.mapjoin.optimized.hashtable` property to `false` in the `hive-site.xml` file. To configure this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the Configuration tab.
3. Search for the **HiveServer2 Advanced Configuration Snippet (Safety Valve) for hive-site.xml**.
4. Enter the following property configuration information:
 - **Name:** `hive.mapjoin.optimized.hashtable`
 - **Value:** `false`
 - **Description:** Disables optimized hash tables for HoS

To enable this configuration, set the **Value** field to `true`.

To set this configuration property in the XML editor, enter the following code:

```
<property>
  <name>hive.mapjoin.optimized.hashtable</name>
  <value>>false</value>
  <description>Disables optimized hash tables for HoS</description>
</property>
```

5. Click **Save Changes**, and restart the service.

For more details, see [HIVE-11182](#) and [HIVE-6430](#).

Hue

There are no notable new features in this release.

Apache Impala

The following are some of the significant new features in this release of Impala.

List of Reserved Words Updated with SQL:2016 Reserved Words

The list of in Impala was updated in CDH 6.0 to be inline with the SQL:2016 standard.

See [Impala Reserved Words](#) for the updated list of reserved words.

Decimal V2 Used by Default

In Impala, two different behaviors of `DECIMAL` types are supported. In CDH 6.0, the V2 behavior of `DECIMAL` is used by default. See [DECIMAL Type](#) for detail information.

Behavior of Column Aliases Changed

To conform to the SQL standard, Impala no longer performs alias substitution in the subexpressions of `GROUP BY`, `HAVING`, and `ORDER BY`. See [Column Aliases](#) for detail information.

Default PARQUET_ARRAY_RESOLUTION Changed

The default value of the `PARQUET_ARRAY_RESOLUTION` was changed to `THREE_LEVEL` in CDH 6.0.

The `PARQUET_ARRAY_RESOLUTION` setting controls the path-resolution behavior for Parquet files with nested arrays. See [PARQUET_ARRAY_RESOLUTION Query Option](#) for the information about the option.

Clustering Hint for Inserts Enabled by Default

In CDH 6.0, the `CLUSTERED` hint is enabled by default. The hint inserts a local sort by the partitioning columns to a query plan.

The `clustered` hint is only effective for HDFS and Kudu tables.

Apache Kafka

The following are some of the notable new features in this release of Kafka CDH 6.0.0.

Kafka Bundled with CDH

As of CDH 6.0.0, Apache Kafka is now included in the CDH bundle. You can choose to install Kafka from the list of custom services or you can add Kafka later to an existing cluster.

The Kafka version in CDH 6.0.0 is based on Apache Kafka [1.0.1](#).

Cloudera documentation for Apache Kafka in CDH 6.0.0 is part of the CDH documentation; see the [Kafka Guide](#).

New Metrics

Base Metrics

- Global Topic Count
- In-Sync Replica Counts
 - Under Min ISR Partition Count
 - Under Min ISR

Broker Metrics

- Health Checks: Error rates
 - Message conversion rate and time
 - Request size and temporary memory size
 - Authentication success and failure rates
 - ZooKeeper status and latency

Security Improvements

This release includes improved diagnostics for SASL and SSL authentication failures as described in [KIP-152](#).

This release includes an upgrade to PrincipalBuilder interface that improves SSL authentication and extends the functionality to SASL authentication. See [KAFKA-5783](#) for details.

Log Context added to logger messages

This release includes using a `LogContext` object that automatically adds a log prefix to every message written by loggers constructed from it.

- The consumer log messages now contain the consumer group and client IDs, which is very helpful when multiple consumers are run on the same instance.
- The producer log messages are automatically prefixed with client ID and transactional ID.
- The NetworkClient log messages now include client IDs.

Default Behavior Changes

- [KAFKA-3356](#) - Removed `ConsumerOffsetChecker`, which was deprecated in Apache Kafka version 0.9.
- [KAFKA-5384](#) - KIP-162: Enabled topic deletion by default. This release changes the default of `delete.topic.enable` to `true`.

Apache Kudu

The following are some of the notable new features in this release of Kudu 1.6 / CDH 6.0.

- Cloudera Manager now supports installing Kudu as part of the Express Wizard installation.
- Cloudera Manager has improved monitoring of Kudu node health. Cloudera Manager will indicate whether the health of the service is concerning or bad according to the number of master or tablet server roles that are not running.
- The disk failure tolerance feature is enabled by default on tablet servers, and the capability was extended to handle data directory failures at runtime. In the event of a runtime disk failure, any tablets with data on a failed

disk will be shut down and restarted on another tablet server. By default, tablets are striped across all available disks. Note that the first configured data directory and the WAL directory cannot currently tolerate disk failures. This will be further improved in future Kudu releases.

- Kudu servers can now adopt new data directories via the `kudu fs update_dirs` tool. The new directory will be used by new tablet replicas only. Removing directories is not yet supported ([KUDU-2202](#)).
- Kudu servers have two new flags to control the webui TLS/HTTPS settings: `--webserver_tls_ciphers` and `--webserver_tls_min_protocol`. These flags allow the advertised TLS ciphers and TLS protocol versions to be configured. Additionally, the webserver now excludes insecure legacy ciphers by default ([KUDU-2190](#)).
- The strategy Kudu uses for automatically healing tablets which have lost a replica has been improved. When a tablet loses a replica due to server or disk failures, the new re-replication strategy, or replica management scheme, first adds a replacement tablet replica before evicting the failed one. With the previous replica management scheme, the system first evicts the failed replica and then adds a replacement. The new replica management scheme allows for much faster recovery of tablets in scenarios where one tablet server goes down and then returns back shortly after 5 minutes or so. The new scheme also provides substantially better overall stability on clusters with frequent server failures ([KUDU-1097](#)).

The following are the notable optimizations improvements made in Kudu.

- Kudu servers can now tolerate short interruptions in NTP clock synchronization. NTP synchronization is still required when any Kudu daemon starts up. If NTP synchronization is not available, diagnostic information is now logged to help pinpoint the issue ([KUDU-1578](#)).
- Tablet server startup time has been improved significantly on servers containing large numbers of blocks.
- The log block manager now performs disk data deletion in batches. This optimization can significantly reduce the time taken to delete data on a tablet.
- The usage of sensitive data redaction flag has been changed. By setting the `--redact=log` flag, redaction will be disabled in the web UI but retained for server logs. Alternatively, `--redact=none` can be used to disable redaction completely.
- The Spark DataSource integration now can take advantage of scan locality for better scan performance. The scan will take place at the closest replica instead of going to the leader.
- Various optimizations were made to reduce the 99th percentile latency of writes on tablet servers. This can also improve throughput on certain write workloads, particularly on larger clusters.
- You can configure Kudu to ignore the system-wide `auth_to_local` mappings configured in `/etc/krb5.conf` by setting the configuration flag `--use_system_auth_to_local=false` ([KUDU-2198](#)).
- The performance of the compaction scheduler has been improved. In previous versions, certain types of time series workloads could cause compaction scheduling to take tens of seconds. These workloads now schedule compactions an order of magnitude more efficiently.
- The compaction scheduler has been improved to avoid running a compaction when the benefit of that compaction is extremely small.
- Tablet servers now consider the health of all replicas of a tablet before deciding to evict one. This can improve stability of the Kudu cluster after experiencing multiple simultaneous daemon failures ([KUDU-2048](#)).
- Several performance improvements have been made to the Kudu master, particularly in concurrency of clients opening tables. This should improve performance in highly concurrent workloads.
- The on-disk size metric for a tablet now includes all data and metadata. Previously, it excluded WAL segments and consensus metadata ([KUDU-1755](#)).
- Added a verbose mode for the Kudu cluster `ksck` command to enable output of detailed information on the cluster's metadata, even when no errors are detected.

Apache Oozie

The following new features and improvements are available in this release of Oozie:

- Major revamp of the Hadoop components: Hadoop 3, HBase 2, Hive 2, Spark 2
- Launch actions are now available via YARN (instead of MapReduce)
- Switch from Tomcat 6 (end-of-life) to Jetty 9
- Local ShareLib improvements:
 - New option to use local paths in the ShareLib instead of HDFS paths
 - Usability improvement: users don't have to upload `.jar` files to HDFS
 - After first-time cluster deployment, high volume of HDFS roundtrips are reduced on container resource localization
 - Improved version management
 - Automatic updates `.jar` files on cluster machines
- Supportability improvements:
 - Transient database outage resiliency
 - Spark action wrap-up:
 - Extended parameter parsing
 - Spark 2 support
 - Database migration tool can cope with large databases
 - Integration test framework improvements
 - Diagnostic bundle collector
 - Coordinator improvements

Apache Parquet

The new features and improvements in Apache Parquet versions 1.6.0 through 1.9.0 are included in the CDH 6.0 release. For the complete list of new features and enhancements that are available upstream in Parquet, see [Apache Parquet Release Notes](#).

In addition to the contents of the upstream Parquet 1.9.0 release, the Parquet in CDH 6.0 includes new features and bug fixes that were added to the upstream Parquet after the latest release. The following are the noteworthy new features added on top of the Parquet 1.9.0.

PARQUET-386: parquet-tools Prints Column Metadata Statistics

When you run `parquet-tools` with `schema` as an argument, the tool will print the statistics data of columns.

See [Using the Parquet File Format with Impala Tables](#) for using `parquet-tools` to examine the structure and data of Parquet files.

PARQUET-1025: New min-max Statistics in parquet-mr

The new min-max statistics is supported in `parquet-mr`. The old min and max statistics were only applicable to integer and floating point types. Additionally, the new `min_value` and `max_value` fields allow efficient filtering of decimal and string values as well. You can read more about these new statistics fields in [Cloudera Engineering blog post](#).

PARQUET-1115: Warning Message in parquet-tools merge

To prevent users from using the `parquet-tools merge` command inappropriately, a warning was added to the help text of the `parquet-tools` command and to the output of the `parquet-tools merge` command if the size of the original row groups are below a threshold.

Many users are tempted to use the new `parquet-tools merge` functionality, because they want to achieve good performance and historically that has been associated with large Parquet files. However, in practice Hive performance won't change significantly after using `parquet-tools merge`, but Impala performance will be much worse. The reason for that is that good performance is not a result of large files but large rowgroups instead (up to the HDFS block size).

However, `parquet-tools merge` does not merge rowgroups, it just places them one after the other. It was intended to be used for Parquet files that are already arranged in row groups of the desired size. When used to merge many small files, the resulting file will still contain small row groups and one loses most of the advantages of larger files (the only one that remains is that it takes a single HDFS operation to read them).

Additional Features and Enhancements

The additional new features and enhancements added to CDH 6.0 are:

- [PARQUET-321](#): Default maximum block padding to 8MB.
- [PARQUET-801](#): Allow UserDefinedPredicates in DictionaryFilter.
- [PARQUET-822](#): Upgrade the Java dependencies.
- [PARQUET-1026](#): Allow unsigned binary stats when the min value equals the max value.
- [PARQUET-1170](#): String values are represented based on logical type and represented properly in tools/logs.

Apache Pig

- Hive UDF support ([PIG-3294](#))
- Auto Local Mode ([PIG-3463](#))

Cloudera Search



Important: Some features included in Apache Solr 7 are not supported in Cloudera Search in CDH 6.0. For more information, see [Cloudera Search Unsupported Features](#) on page 1242.

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has added many new features since the 4.10 version of Apache Solr used in recent CDH 5 releases.

For information on the new features added in Solr 5, Solr 6, and Solr 7, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Some new feature highlights include:

Solr JSON Request API

You can now create search queries in JSON format, which is much easier to read and write than the previous Solr query syntax.

More information:

- Apache Solr Reference Guide: [JSON Request API](#)
- Yonik Seeley's blog post: [Solr JSON Request API](#)

JSON Facet API

You can now write facet queries in JSON format. Facet structure is inherently nested, and is much easier to navigate in JSON format.

More information:

- [SOLR-7214](#)
- Yonik Seeley's blog post: [JSON Facet API](#)

Nested Faceting

You can now switch the facet domain between parents and children for the purposes of calculating facets.

More information:

- [SOLR-7676](#)
- Yonik Seeley's blog post: [Nested Objects in Solr](#)

Per-Collection `clusterstate.json`

In CDH 5, Solr stores the states of all cores and collections in a single file in ZooKeeper, named `clusterstate.json`. This creates a single point of failure and a point of contention in large clusters with many actively changing collections. In CDH 6, Solr stores the state of cores in a single `clusterstate.json` file for each collection.

More information:

- [SOLR-5473](#)

Improved Integration with Apache Sentry

Cloudera Search in CDH 6 supports pluggable authorization modules, including Apache Sentry. The Sentry privilege model for Cloudera Search has been improved to support more granular control over privileges.

More information:

- [Authorization Privilege Model for Cloudera Search](#)
- Apache Solr Reference Guide: [Authentication and Authorization Plugins](#)
- [SENTRY-1475](#)

HyperLogLog Based Distributed Cardinality

This is a faster (but less accurate) way to calculate the number of distinct values on high cardinality fields. This implementation uses less memory than the previous one.

More information:

- [SOLR-6968](#)
- [SOLR-7553](#)
- Yonik Seeley's blog post: [Count Distinct in Solr](#)

Improved Support for DocValues

More information:

- Apache Solr Reference Guide: [DocValues](#)

Distributed IDF

In CDH 5, Solr calculates TF-IDF at the shard level. This results in misleading relevancy when TF-IDF varies a lot among shards. In CDH 6, Solr can use global TF-IDF statistics.

More information:

- Apache Solr Reference Guide:
 - [Distributed Requests](#)
 - [Distributed Search with Index Sharding](#)
- [SOLR-1632](#)

Jetty 9

In CDH 6, Solr runs inside a Jetty container instead of Tomcat.

Apache Sentry

There are no notable new features in this release.

Apache Spark

The following list describes what's new and changed in Apache Spark for CDH 6. Because CDH 6 includes features from Spark 2.x, this list includes the features across several releases of the CDS Powered By Apache Spark parcel, which was available separately for CDH 5.

- More flexibility to interpret `TIMESTAMP` values written by Impala. Setting the `spark.sql.parquet.int96TimestampConversion` configuration setting to `true` makes Spark interpret `TIMESTAMP` values, when reading from Parquet files written by Impala, without applying any adjustment from

the UTC to the local time zone of the server. This behavior provides better interoperability for Parquet data written by Impala, which does not apply any time zone adjustment to `TIMESTAMP` values when reading or writing them.

- The Spark “blacklisting” feature is now turned on by default. This feature takes hosts out of the pool of executors when they exhibit unreliable behavior, even if those hosts are not completely down. See the [Blacklisting in Apache Spark](#) blog post for details.
- Hive On Spark now runs on top of Apache Spark 2.x.
- Spark On HBase now runs on top of Apache Spark 2.x.
- The Oozie Spark action now runs on top of Apache Spark 2.x.
- Support for using Spark 2 jobs to read and write data on the Azure Data Lake Store (ADLS) cloud service.
- Version 2.2 or higher of CDS Powered By Apache Spark requires JDK 8.
- New direct connector to Kafka that uses the new Kafka consumer API. See [Using Kafka with Apache Spark Streaming for Stream Processing](#) for details.
- New `SparkSession` object replaces `HiveContext` and `SQLContext`.
 - Most of the Hive logic has been reimplemented in Spark.
 - Some Hive dependencies still exist:
 - SerDe support.
 - UDF support.
- Added support for the unified Dataset API.
- Faster Spark SQL achieved with whole stage code generation.
- More complete SQL syntax now supports subqueries.
- Adds the `spark-csv` library.
- Backport of SPARK-5847. The root for metrics is now the app name (`spark.app.name`) instead of the app ID. The app ID requires investigation to match to the app name, and changes when streaming jobs are stopped and restarted.

Apache Sqoop

The following are the new features in this release of Sqoop. All the new features available upstream in Sqoop 1.4.7 have been included in the CDH 6.0 release. For more information on Sqoop 1.4.7, see [Release Notes for Sqoop 1.4.7](#).

Sqoop connector parcel locations

Starting in CDH 6.0, Sqoop Connector parcels can be found in two separate parcel repositories:

<https://archive.cloudera.com/sqoop-teradata-connector1/latest/> and

<https://archive.cloudera.com/sqoop-netezza-connector1/latest/>.



Note: Note that from the CDH 6.0 release Sqoop does not include `com.cloudera` classes. It includes `org.apache.sqoop` classes. If you upgrade to CDH 6.0, upgrade the Netezza/Teradata connector parcels from the Sqoop connector parcel repositories.

SQOOP-816: Add support for external Hive tables

You can specify the importing of data into an external table in Hive (instead of a managed table, which is the default behavior). In order to do this, use the `--external-table-dir` option to specify the path. Include the `--hive-import` flag in the command line arguments if you use the import tool.

Example commands:

```
# Importing from Oracle RDBMS server into external HIVE table:
sqoop import --hive-import --connect $CONN --table $TABLENAME --username $USER --password
$PASS --external-table-dir /tmp/external_table_example
```

```
# Creating a hive table with a different name than in the database:
sqoop create-hive-table --connect $CONN --table $TABLENAME --username $USER --password
$PASS --external-table-dir /tmp/foobar_example --hive-table foobar
```

SQOOP-1904: Add support for DB2's XML data type

Added support for DB2's XML data type when importing to HDFS. Avro and Parquet files are not supported. The `--as-textfile` and `--as-sequencefile` options work as expected.

Example commands:

```
# the import command works as expected:
sqoop import --connect $CONN --table $TABLENAME --username $USER --password $PASS
```

```
# export back to table in the database:
sqoop export --connect $CONN --table TEST_FOOBAR --username $USER --password $PASS
--export-dir path/to/imported/data
```

SQOOP-1905: Add `--schema` option for `import-all-tables` and `list-tables` for DB2 connector

Sqoop now supports the `--schema` tool option for DB2. If the option is not present, then the schema of the current user will be used as default.



Note: This option does not work for other tools, such as the `import` tool or the `export` tool.

Example commands:

```
sqoop list-tables --connect $CONN --username $USER --password $PASS -- --schema DB2INST2
```

```
sqoop import-all-tables --connect $CONN --username $USER --password $PASS -- --schema
DB2INST2
```

SQOOP-2936: Provide Apache Atlas integration for hcatalog-based exports

Sqoop already supported publishing information about its data operations via the `SqoopJobDataPublisher` class before this change. However, this class is now extended to allow Apache Atlas to identify data lineage when importing or exporting from or to Hive, by publishing the Hive database and table names along with the previously published data.

SQOOP-2976: Flag to expand decimal values to fit Avro schema

The `sqoop.avro.decimal_padding.enable` flag was added to Sqoop to allow padding decimal values when importing data into Avro files. This flag must be used together with `sqoop.avro.logical_types.decimal.enable` set to **true**. The padding enables the user to import decimal and number types (with a *declared precision and scale*) into Avro files when using databases that do not store the decimal values padded, such as the Oracle RDBMS.

Example command:

```
sqoop import -Dsqoop.avro.decimal_padding.enable=true
-Dsqoop.avro.logical_types.decimal.enable=true --connect $CON --username $USER --password
$PASS --query "select * from table_name where \${CONDITIONS}" --target-dir
hdfs://nameservice1/etl/target_path --as-avrodatafile --verbose -m 1
```

SQOOP-3178: Incremental Merging for Parquet File Format

Sqoop now supports the incremental merging of parquet files. The merge tool combines two datasets where entries in one dataset should overwrite entries of an older dataset.

```
# As with avro data file, the merge tool requires two already existing parquet imports:
sqoop import --connect $CONN --table $TABLENAME --username $USER --password $PASS
--target-dir incr_merge_test_1 --as-parquetfile
sqoop import --connect $CONN --table $TABLENAME --username $USER --password $PASS
--target-dir incr_merge_test_2 --as-parquetfile
```

```
# the merge command itself looks like this:
sqoop merge --new-data incr_merge_test_2 --onto incr_merge_test_1 --target-dir merged
--jar-file datatypes.jar --class-name Foo --merge-key id
```

The feature also works with incremental imports (`--incremental lastmodified`).

SQOOP-3216: Expanded Metastore support for MySQL, Oracle, Postgresql, Microsoft SQL Server, and DB2

In addition to HSQLDB, Sqoop can now store metastore metadata in MySQL, Oracle, Postgresql, Microsoft SQL Server, and DB2.

The JDBC connection string of the database storing the metastore has to be configured with the `--meta-connect` option or using the `sqoop.metastore.client.autoconnect.url` property in `sqoop-site.xml`.

The following table includes the supported connection string formats:

| Service | Connect String Format |
|----------------------|---|
| MySQL | <code>jdbc:mysql://<server>:<port>/<dbname></code> |
| HSQLDB | <code>jdbc:hsqldb:hsqldb://<server>:<port>/<dbname></code> |
| PostgreSQL | <code>jdbc:postgresql://<server>:<port>/<dbname></code> |
| Oracle | <code>jdbc:oracle:thin:@//<server>:<port>/<SID></code> |
| DB2 | <code>jdbc:db2://<server>:<port>/<dbname></code> |
| Microsoft SQL Server | <code>jdbc:sqlserver://<server>:<port>;database=<dbname></code> |

If the `--meta-connect` option is present, then Sqoop tries to connect to the metastore database specified in this parameter value. Sqoop uses the username and password specified in `--meta-username` and `--meta-password` parameters. If they are not present, Sqoop uses empty username and password values. If the database in the connection string is not supported, Sqoop throws an exception.

If the `--meta-connect` parameter is not present, Sqoop checks if `sqoop.metastore.client.enable.autoconnect` configuration parameter is set to `false`. The default value is `true`. If the parameter is `false`, Sqoop throws an error, since there are no applicable metastore implementations.

Next, Sqoop checks the `sqoop.metastore.client.autoconnect.url` configuration parameter. In this parameter, users can specify a JDBC connection string to a metastore database. Supported databases are HSQLDB, MySQL, Oracle, PostgreSQL, DB2 and SQL Server. If this parameter is not present, Sqoop creates an embedded HSQLDB metastore in the home directory of the OS user that executes the sqoop command. The username and password can be specified in `sqoop.metastore.client.autoconnect.username` (default value: SA) and `sqoop.metastore.client.autoconnect.password` (default value is the empty string). If the connection string in `sqoop.metastore.client.autoconnect.url` is not supported, Sqoop throws an exception.



Note: Sqoop needs the corresponding JDBC drivers to be installed to be able to connect to the metastore (except when using HSQLDB metastore). The drivers for the metastore have to be installed the same way drivers are installed for connectors.

As in previous versions, the metastore tool can only start a shared HSQLDB instance. To use a metastore backed by a database other than HSQLDB, start and configure it manually and provide the correct JDBC connection string to Sqoop.

Upon the first connection, Sqoop creates the necessary metadata tables, so the database user specified in the `--meta-username` option has to have CREATE TABLE permission.

Example commands

- Listing available jobs in the metastore:

```
sqoop job --list --meta-connect jdbc:oracle:thin:@//myhost:1521/ORCLCDB --meta-username
ms_user --meta-password ms_password
```

- Creating a new job in the metastore:

```
sqoop job --create myjob1 --meta-connect jdbc:oracle:thin:@//myhost:1521/ORCLCDB
--meta-username ms_user --meta-password ms_password -- import --connect
jdbc:mysql://mysqlhost:3306/sqoop --username sqoop --password sqoop --table "TestTable"
-m 1
```

- Executing an existing job:

```
sqoop job --exec myjob1 --meta-connect jdbc:oracle:thin:@//myhost:1521/ORCLCDB
--meta-username ms_user --meta-password ms_password
```

- Showing the definition of an existing job:

```
sqoop job --show myjob2 --meta-connect jdbc:oracle:thin:@//myhost:1521/ORCLCDB
--meta-username ms_user --meta-password ms_password
```

- Deleting an existing job:

```
sqoop job --delete myjob1 --meta-connect jdbc:oracle:thin:@//myhost:1521/ORCLCDB
--meta-username ms_user --meta-password ms_password
```

Apache Zookeeper

There are no notable new features in this release.

Fixed Issues in CDH 6.0.0

See below for issues fixed in CDH 6.0.0, grouped by component:

Apache Accumulo

Running Apache Accumulo on top of a CDH 6.0.0 cluster is not currently supported. If you try to upgrade to CDH 6.0.0 you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Apache Avro

There are no notable fixed issues in this release.

Apache Crunch

There are no notable fixed issues in this release.

Apache Flume

There are no notable fixed issues in this release.

Apache Hadoop

HDFS

- [HADOOP-12267](#) - DistCp to S3a fails due to integer overflow in retry timer.

MapReduce 2 and YARN

- [YARN-4212](#) (CDH-31358) - Jobs in pool with DRF policy will not run if root pool is FAIR.
- [MAPREDUCE-6638](#) (CDH-37412) - Jobs with encrypted spills do not recover if the Application Master goes down.

- [YARN-1558](#) - Moving jobs between queues not persistent after restart.

Apache HBase

In CDH 6.0.0, the default values for properties that are required to enable cell-level ACLs have changed. Previously, you needed to modify the properties to enable cell-level ACLs. In CDH 6.0.0, you do not need to modify them. The properties and their new default values are listed below:

```
hbase.security.exec.permission.checks => true
hbase.security.access.early_out => false
hfile.format.version => 3
```

For information about the upstream fixes, see the [Apache HBase JIRAs](#).

The following JIRA has also been closed:

- [HBASE-7621](#) - RemoteHTable now supports binary row keys with any character or byte by properly encoding request URLs.

Apache Hive / HCatalog / Hive on Spark

In CDH 6.0, Hive fixed issues resulted in new features and incompatible changes. For details on these fixed issues, see the following sections of the CDH 6.0 Release Notes for Hive:

- [New Features in Hive CDH 6.0](#)
- [Incompatible Changes in Hive CDH 6.0](#)

Hue

There are no notable fixed issues in this release.

Apache Impala

There are no notable fixed issues in this release

Apache Kafka

Authenticated Kafka clients may impersonate other users

Authenticated Kafka clients may impersonate any other user via a manually crafted protocol message with SASL/PLAIN or SASL/SCRAM authentication when using the built-in PLAIN or SCRAM server implementations in Apache Kafka.

Note that the SASL authentication mechanisms that apply to this issue are neither recommended nor supported by Cloudera. In Cloudera Manager (CM) there are [four choices](#): PLAINTEXT, SSL, SASL_PLAINTEXT, and SASL_SSL. The SASL/PLAIN option described in this issue is not the same as SASL_PLAINTEXT option in CM. That option uses Kerberos and is not affected. As a result it is highly unlikely that Kafka is susceptible to this issue when managed by CM unless the authentication protocol is overridden by an Advanced Configuration Snippet (Safety Valve).

Products affected: CDK Powered by Apache Kafka

Releases affected: CDK 2.1.0 to 2.2.0, CDK 3.0.0

Users affected: All users

Detected by: Rajini Sivaram (rsivaram@apache.org)

Severity (Low/Medium/High):8.3 (High) ([CVSS:3.0/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:H/A:H](#))

Impact:Privilege escalation.

CVE: CVE-2017-12610

Immediate action required: Upgrade to a newer version of CDK Powered by Apache Kafka where the issue has been fixed.

Addressed in release/refresh/patch: CDK 3.1, CDH 6.0 and higher

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2018-332: Two Kafka Security Vulnerabilities: Authenticated Kafka clients may impersonate other users and and may interfere with data replication](#)

Authenticated clients may interfere with data replication

Authenticated Kafka users may perform an action reserved for the Broker via a manually created fetch request interfering with data replication, resulting in data loss.

Products affected: CDK Powered by Apache Kafka

Releases affected: CDK 2.0.0 to 2.2.0, CDK 3.0.0

Users affected: All users

Detected by: Rajini Sivaram (rsivaram@apache.org)

Severity (Low/Medium/High):6.3 (Medium) ([CVSS:3.0/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:L/A:L](#))

Impact:Potential data loss due to improper replication.

CVE:CVE-2018-1288

Immediate action required: Upgrade to a newer version of CDK Powered by Apache Kafka where the issue has been fixed.

Addressed in release/refresh/patch: CDK 3.1, CDH 6.0 and higher

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2018-332: Two Kafka Security Vulnerabilities: Authenticated Kafka clients may impersonate other users and and may interfere with data replication](#)

Upstream Issues Fixed

Metrics

- [KAFKA-6252](#) - A metric named 'XX' already exists, can't register another one.
- [KAFKA-5987](#) - Kafka metrics templates (`MetricNameTemplate` and the `Metric.toHtmlTable`) used in document generation should maintain order of tags.
- [KAFKA-5968](#) - Remove all broker metrics during shutdown.
- [KAFKA-5746](#) - New metrics to support health checks, including:

Broker-side metrics

- Error rates
- Message conversion rate and time
- Request size and temporary memory size
- Authentication success and failure rates
- ZooKeeper status and latency

Client-side metrics

- Client versions exposed as a metric
- [KAFKA-5738](#) - Add cumulative count attribute for all Kafka rate metrics to make Kafka metrics more compatible with other metrics such as Yammer.
- [KAFKA-5597](#) - Auto-generate Producer sender metrics.
- [KAFKA-5461](#) - KIP-168: New metric ("GlobalTopicCount") track the total topic count per cluster.
- [KAFKA-5341](#) - New metrics ("UnderMinIsrPartitionCount" and per-partition "UnderMinIsr") track the number of partitions whose in-sync replicas count is less than the minimum configured for in-sync replicas (`min.insync.replicas`).

Security Supportability

- [KAFKA-6258](#) - `SSLTransportLayer` should keep reading from the socket until either the buffer is full or the socket has no more data.
- [KAFKA-5920](#) - Handle SSL authentication failures as non-retriable exceptions in clients marked `CONNECTED` and `DISCONNECTED` at the same time.
- [KAFKA-5854](#) - KIP-152: Handle SASL authentication failures as non-retriable exceptions in clients.

- [KAFKA-5783](#) - KIP-189: Implement `KafkaPrincipalBuilder` interface with support for SASL.
- [KAFKA-5720](#) - In Jenkins, `kafka.api.SaslSslAdminClientIntegrationTest` failed with `org.apache.kafka.common.errors.TimeoutException`.
- [KAFKA-5417](#) - Clients get inconsistent connection states when SASL/SSL connection is marked CONNECTED and DISCONNECTED at the same time.
- [KAFKA-4764](#) - KIP-152: Improve diagnostics for SASL authentication failures.

Kafka Client

- [KAFKA-6287](#) - Inconsistent protocol type for empty consumer groups.
- [KAFKA-5856](#) - KIP 195: Increase the number of partitions of a topic using `AdminClient.createPartitions()`.
- [KAFKA-5763](#) - Refactor `NetworkClient` to use `LogContext`.
- [KAFKA-5762](#) - Refactor `AdminClient` to use `LogContext`.
- [KAFKA-5755](#) - Refactor `KafkaProducer` to use `LogContext`.
- [KAFKA-5737](#) - `KafkaAdminClient` thread should be a daemon.
- [KAFKA-5726](#) - The `KafkaConsumer` method `subscribe` overload that takes just *pattern* without `ConsumerRebalanceListener`.
- [KAFKA-5629](#) - `ConsoleConsumer` overrides `auto.offset.reset` property when provided on the command line without warning about it.
- [KAFKA-5556](#) - The `KafkaConsumer` method `commitSync` throws the exception `IllegalStateException: Attempt to retrieve exception from future which hasn't failed`
- [KAFKA-5534](#) - The `KafkaConsumer` method `offsetsForTimes` should include partitions in result even if no offset could be found.
- [KAFKA-5512](#) - `KafkaConsumer`: High memory allocation rate when idle.
- [KAFKA-4856](#) - Calling `KafkaProducer.close()` from multiple threads may cause spurious error.
- [KAFKA-4767](#) - `KafkaProducer` is not joining its IO thread properly.
- [KAFKA-4669](#) - `KafkaProducer.flush` hangs when `NetworkClient.handleCompletedReceives` throws an exception.
- [KAFKA-2105](#) - `NullPointerException` in client on `metadataRequest`.

Apache Kudu

There are no notable fixed issues in this release

Apache Oozie

There are no notable fixed issues in this release.

Apache Parquet

- [PARQUET-1217](#) - Incorrect handling of missing values in Statistics.
- [PARQUET-357](#) - Parquet-thrift generates wrong schema for Thrift binary fields.
- [PARQUET-686](#) - Clarifications about min-max stats.
- [PARQUET-753](#) - Fixed `GroupType.union()` to handle original type.
- [PARQUET-765](#) - Upgrade Avro to 1.8.1.
- [PARQUET-783](#) - Close the underlying stream when an `H2SeekableInputStream` is closed.
- [PARQUET-791](#) - Add missing column support for `UserDefinedPredicate`.
- [PARQUET-806](#) - Parquet-tools silently suppresses error messages.
- [PARQUET-825](#) - Static analyzer findings (NPEs, resource leaks).
- [PARQUET-1005](#) - Fix `DumpCommand` parsing to allow column projection.
- [PARQUET-1064](#) - Deprecate type-defined sort ordering for INTERVAL type.
- [PARQUET-1065](#) - Deprecate type-defined sort ordering for INT96 type.
- [PARQUET-1133](#) - Add int96 support by returning bytearray, Skip originalType comparison for map types when originalType is null.
- [PARQUET-1141](#) - Fix field ID handling.
- [PARQUET-1152](#) - Parquet-thrift doesn't compile with Thrift 0.9.3.

- [PARQUET-1153](#) - Parquet-thrift doesn't compile with Thrift 0.10.0.
- [PARQUET-1185](#) - TestBinary#testBinary unit test fails after PARQUET-1141.
- [PARQUET-1191](#) - Type.hashCode() takes originalType into account but Type.equals() does not.
- [PARQUET-1208](#) - Occasional endless loop in unit test.
- [PARQUET-1217](#) - Incorrect handling of missing values in Statistics.
- [PARQUET-1246](#) - Parquet ignores float/double statistics in case of NaN.

Apache Pig

There are no notable fixed issues in this release of Apache Pig.

Cloudera Search

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has fixed many issues since the 4.10 version of Apache Solr used in recent CDH 5 releases.

For information on the fixes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

There are no notable fixed issues in this release

Apache Spark

CDH 6.0.0 uses CDS 2.2 Release 2 Powered By Apache Spark. The fixed issues listed in the [release notes for CDS 2.2 Release 2](#) have been incorporated in CDH 6.0.0.

Apache Sqoop

CDH 6.0 uses Sqoop 1.4.7. The fixed issues listed in the [release notes for Sqoop 1.4.7](#) have been incorporated in CDH 6.0. In addition, Cloudera has backported the following JIRAs into Sqoop in CDH 6.0.0, which are not yet released upstream:

- [SQOOP-3273](#): Removing com.cloudera.sqoop packages
- [SQOOP-3275](#): HBase test cases should start mini DFS cluster as well
- [SQOOP-3255](#): Sqoop ignores metastore properties defined in sqoop-site.xml
- [SQOOP-3241](#): ImportAllTablesTool uses the same SqoopOptions object for every table import
- [SQOOP-3153](#): Sqoop export with --as-<spec_file_format> error message could be more verbose
- [SQOOP-3266](#): Update 3rd party and manual test running related info in COMPILING.txt
- [SQOOP-3233](#): SqoopHCatImportHelper.convertNumberTypes check for Varchar instead of Char
- [SQOOP-3257](#): Sqoop must not log database passwords
- [SQOOP-3243](#): Importing BLOB data causes 'Stream closed' error on encrypted HDFS
- [SQOOP-3229](#): Document how to run third party tests manually with databases running in docker
- [SQOOP-3216](#): Expanded Metastore support for MySQL, Oracle, Postgresql, MSSql, and DB2
- [SQOOP-3014](#): Sqoop with HCatalog import loose precision for large numbers that does not fit into double
- [SQOOP-3232](#): Remove Sqoop dependency on deprecated HBase APIs
- [SQOOP-3222](#): Test HBase kerberized connectivity
- [SQOOP-3195](#): SQLServerDatatypeImportDelimitedFileTest can fail in some environments
- [SQOOP-3196](#): Modify MySQLAuthTest to use configurable test database parameters
- [SQOOP-3139](#): sqoop tries to re execute select query during import in case of a connection reset error and this is causing lots of duplicate records from source
- [SQOOP-3218](#): Make sure the original ClassLoader is restored when running HCatalog tests
- [SQOOP-3178](#): Incremental Merging for Parquet File Format
- [SQOOP-3206](#): Make sqoop fail if user uses --direct connector and tries to encode a null value when using a MySQL database

Excluded JIRA

[SQOOP-3149](#) is part of Sqoop 1.4.7, but because it contains a serious bug, Cloudera has excluded it from the CDH 6.0 release.

Apache Zookeeper

There are no notable fixed issues in this release.

Unsupported Features in CDH 6.0.0

This page lists the unsupported features in CDH 6.0.0. For the complete list of Known Issues and Limitations, see [Known Issues and Limitations in CDH 6.0.0](#) on page 1277.

Apache Accumulo

Running Apache Accumulo on top of a CDH 6.0.0 cluster is not currently supported. If you try to upgrade to CDH 6.0.0 you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Cloudera Data Science Workbench

Cloudera Data Science Workbench is not supported with CDH 6.0.x. If you try to upgrade to CDH 6.0.x, you will be asked to remove the CDSW service from your cluster.

Cloudera Data Science Workbench 1.5.0 (and higher) is supported with CDH 6.1.x (and higher).

Apache Hadoop Unsupported Features

The following sections list unsupported features in Hadoop common components:

- [HDFS Unsupported Features](#) on page 1240
- [YARN Unsupported Features](#) on page 1240

HDFS Unsupported Features

The following HDFS features are not supported in CDH 6.0.0:

- ACLs for the NFS gateway
- Aliyun Cloud Connector
- Erasure Coding
- HDFS NameNode Federation
- HDFS Router Based Federation
- HDFS truncate
- More than two NameNodes
- Openstack Swift
- Quota support for Storage Types
- SFTP FileSystem
- Upgrade Domain
- Variable length block
- ZStandard Compression Codec

YARN Unsupported Features

The following YARN features are not supported in CDH 6.0.0:

- Application Timeline Server v2 (ATSv2)
- Cgroup Memory Enforcement
- Container Resizing
- Distributed or Centralized Allocation of Opportunistic Containers
- Distributed Scheduling
- Docker on YARN (DockerContainerExecutor)
- Native Services

- New Aggregated Log File Format
- Node Labels
- Pluggable Scheduler Configuration
- Reservation REST APIs
- Resource Profiles
- Resource Estimator Service
- Rolling Log Aggregation
- (non-Zookeeper) ResourceManager State Store
- Shared Cache
- YARN Federation
- YARN WebUI v2

Apache HBase Unsupported Features

The following HBase features are not supported in CDH 6.0.0:

- Master hosting meta
- Cloudera does not provide support for user-provided custom coprocessors of any kind.
- Server-side encryption of HFiles. You should configure HDFS client-side encryption.
- In-memory compaction
- hbck read-write repair mode. See [Checking Consistency in HBase Tables](#) for more information.

The following features, introduced upstream in HBase, are not supported in CDH:

- Visibility labels
- Stripe compaction
- Clients setting priority on operations
- Specifying a custom asynchronous connection implementation

Apache Hive Unsupported Features

The following Hive features are not supported in CDH 6.0.0:

- AccumuloStorageHandler ([HIVE-7068](#))
- ACID ([HIVE-5317](#))
- Built-in `version()` function is not supported (CDH-40979)
- Cost-based Optimizer (CBO) and gathering column statistics required by CBO
- Explicit Table Locking
- HCatalog - HBase plugin
- Hive Authorization (Instead, use Apache Sentry.)
- Hive on Apache Tez
- Hive Local Mode Execution
- Hive Metastore - Derby
- Hive Web Interface (HWI)
- HiveServer1 / JDBC 1
- HiveServer2 Dynamic Service Discovery (HS2 HA) ([HIVE-8376](#))
- HiveServer2 - HTTP Mode (Use THRIFT mode.)
- HPL/SQL ([HIVE-11055](#))
- LLAP (Live Long and Process framework)
- Scalable Dynamic Partitioning and Bucketing Optimization ([HIVE-6455](#))
- Session-level Temporary Tables ([HIVE-7090](#))
- Table Replication Across HCatalog Instances ([HIVE-7341](#))
- TRUNCATE TABLE on external tables (causes Error: org.apache.spark.sql.AnalysisException)

Apache Kafka Unsupported Features

The following Kafka feature is not supported in CDH 6.0.0:

- CDK Powered by Apache Kafka supports Java based clients only. Clients developed with C, C++, Python, .NET and other languages are currently not supported.
- Idempotent and transactional capabilities in the producer are currently an unsupported beta feature given their maturity and complexity. This feature will be supported in a future release.
- Kafka Connect is included in CDH 6.0.0, but is not supported. Flume and Sqoop are proven solutions for batch and real time data loading that complement Kafka's message broker capability. See [Flafka: Apache Flume Meets Apache Kafka for Event Processing](#) for more information.
- Kafka Streams is included in CDH 6.0.0, but is not supported. Instead, use Spark and Spark Streaming have a fully functional ETL/stream processing pipeline. See [Using Kafka with Apache Spark Streaming for Stream Processing](#) for more information.
- The Kafka default authorizer is included in CDH 6.0.0, but is not supported. This includes setting ACLs and all related APIs, broker functionality, and command-line tools.
- Using Kafka with a JBOD setup is an unsupported beta feature given its maturity and complexity. Using JBOD in production will be supported only in a later release.
- The legacy Scala clients (producer and consumer) that are under the `kafka.producer.*` and `kafka.consumer.*` package are deprecated in CDH 6.0.0. See [Deprecated Scala-based Client API and New Java Client API](#) on page 1259.

Apache Oozie Unsupported Features

The following Oozie feature is not supported in CDH 6.0.0:

- Conditional coordinator input logic.

Cloudera does not support Derby database to use with Oozie. You can use it for testing or debugging purposes, but Cloudera does not recommend using it in production environments.

Apache Pig Unsupported Features

The following Pig features are not supported in CDH 6.0.0:

- Pig on Tez is not supported in CDH 6.0.0 ([PIG-3446](#) / [PIG-3419](#)).
- Pig on Spark.

Cloudera Search Unsupported Features

The following Search features are not supported in CDH 6.0.0:

- [Solr SQL/JDBC](#)
- [Graph Traversal](#)
- [Cross Data Center Replication \(CDCR\)](#)
- [SolrCloud Autoscaling](#)
- HDFS Federation
- Saving search results
- Solr contrib modules (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported)
- [Logging Slow Queries](#)

Apache Sentry Unsupported Features

The following Sentry features are not supported in CDH 6.0.0:

- Import and export of Sentry metadata to and from Sentry servers
- Sentry shell command line for Hive
- Relative URI paths ([Known Issue](#))
- Object types Server and URI in

```
show grant role <role name> on object <object name>
```

[\(Known Issue\)](#)

- ALTER and DROP privileges for Hive and Impala

In addition, as of CDH 6.0.0, Sentry policy files have been removed. See the Sentry [Incompatible Changes](#) for more information.

Apache Spark Unsupported Features

The following Spark features are not supported in CDH 6.0.0:

- Apache Spark experimental features/APIs are not supported unless stated otherwise.
- Using the JDBC Datasource API to access Hive or Impala is not supported
- ADLS not Supported for All Spark Components. Microsoft Azure Data Lake Store (ADLS) is a cloud-based filesystem that you can access through Spark applications. Spark with Kudu is not currently supported for ADLS data. (Hive on Spark is available for ADLS in CDH 5.12 and higher.)
- IPython / Jupyter notebooks is not supported. The IPython notebook system (renamed to Jupyter as of IPython 4.0) is not supported.
- Certain Spark Streaming features not supported. The `mapWithState` method is unsupported because it is a nascent unstable API.
- Thrift JDBC/ODBC server is not supported
- Spark SQL CLI is not supported
- GraphX is not supported
- SparkR is not supported
- Structured Streaming is not supported
- Spark cost-based optimizer (CBO) not supported
- Dynamic partition overwrite mode (`spark.sql.sources.partitionOverwriteMode=dynamic`) is not supported
- Running Spark on a host that is not managed by Cloudera Manager is not supported

Apache Sqoop Unsupported Features

The following Sqoop feature is not supported in CDH 6.0.0:

- `import-mainframe`

Incompatible Changes in CDH 6.0.0**Important:**

In addition to incompatible changes, CDH 6 also deprecated or removed support for several components, including Spark 1 and MapReduce v1. For information about components, sub-components, or functionality that are deprecated or no longer supported, see [Deprecated Items](#) on page 1459.

See below for incompatible changes in CDH 6.0.0, grouped by component:

Apache Accumulo

Running Apache Accumulo on top of a CDH 6.0.0 cluster is not currently supported. If you try to upgrade to CDH 6.0.0 you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Apache Avro

API Changes

One method was removed in CDH 6.0.0:

```
GenericData.toString (Object datum, StringBuilder buffer)
```

Incompatible Changes from Avro 1.8.0

- Changes in logical types cause code generated in Avro with CDH 6 to differ from code generated in Avro with CDH 5. This means that old generated code will not necessarily work in CDH 6. Cloudera recommends that users regenerate their generated Avro code when upgrading.
- [AVRO-997](#): Generic API requires GenericEnumSymbol - likely to break current Generic API users that often have String or Java Enum for these fields
- [AVRO-1502](#): Avro Objects now Serializable - IPC needs to be regenerated/recompiled
- [AVRO-1602](#): removed Avro internal RPC tracing, presumed unused. Current rec would be HTrace
- [AVRO-1586](#): Compile against Hadoop 2 - probably not an issue since we've been compiling against Hadoop 2 for C5.
- [AVRO-1589](#): [Java] ReflectData.AllowNulls will create incompatible Schemas for primitive types - may need a KI since it used to fail at runtime but now will fail earlier.

Cloudera Data Science Workbench

Cloudera Data Science Workbench is not supported with CDH 6.0.x. If you try to upgrade to CDH 6.0.x, you will be asked to remove the CDSW service from your cluster.

Cloudera Data Science Workbench 1.5.0 (and higher) is supported with CDH 6.1.x (and higher).

Cloudera Issue: DSE-2769

Apache Crunch



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

The following changes are introduced in CDH 6.0.0, and are not backward compatible:

- Crunch is available only as Maven artifacts from the Cloudera Maven repository. It is not included as part of CDH. For more information, see [Apache Crunch Guide](#).
- Crunch supports only Spark 2 and higher releases.
- Crunch supports only HBase 2 and higher releases.
 - The API methods in Crunch-HBase use HBase 2 API types and methods.

Apache Flume

AsyncHBaseSink and HBaseSink

CDH 6 uses HBase 2.0. AsyncHBaseSink is incompatible with HBase 2.0 and is not supported in CDH 6. HBaseSink has been replaced with HBase2Sink. HBase2Sink works the same way as HBaseSink. The only difference is that it is compatible with HBase 2.0. No additional configuration is required when HBase2Sink is used, but you can replace the component type in your configuration.

For example, replace this text:

```
agent.sinks.my_hbase_sink.type = hbase
```

With this:

```
agent.sinks.my_hbase_sink.type = hbase2
```

Or, if you use the FQN of the sink class, replace this text:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase.HBaseSink
```

With this:

```
agent.sinks.my_hbase_sink.type = org.apache.flume.sink.hbase2.HBase2Sink
```

For more information about how to configure HBase2Sink, see [Importing Data Into HBase](#).

For more information about the use of legacy names, see [Serializer Class Names](#).

`com.google.common.collect.ImmutableMap`

Flume has removed `com.google.common.collect.ImmutableMap` from the `org.apache.flume.Context` API and replaced it with `java.util.Map` due to Guava compatibility issues ([FLUME-2957](#)). Plugins using the `Context.getParameters()` and `Context.getSubProperties()` APIs will need to assign the return value of those methods to a `Map<String, String>` variable instead of an `ImmutableMap<String, String>` variable, if they do not already do so. Most usages in the Flume codebase already used `Map<String, String>` at the time of this change.

Apache Hadoop

- [HDFS Incompatible Changes](#) on page 1245
- [MapReduce](#) on page 1246
- [YARN](#) on page 1246

HDFS Incompatible Changes

- HFTP has been removed.
- The S3 and S3n connectors have been removed. Users should now use the S3a connector.
- The BookkeeperJournalManager has been removed.
- Changes were made to the structure of the HDFS JAR files to better isolate clients from Hadoop library dependencies. As a result, client applications that depend on Hadoop's library dependencies may no longer work. In these cases, the client applications will need to include the libraries as dependencies directly.
- Several library dependencies were upgraded. Clients that depend on those libraries may break because the library version changes. In these cases, the client applications will need to either be ported to the new library versions or include the libraries as dependencies directly.
- [HDFS-6962](#) changes the behavior of ACL inheritance to better align with POSIX ACL specifications, which states that the umask has no influence when a default ACL propagates from parent to child. Previously, HDFS ACLs applied the client's umask to the permissions when inheriting a default ACL defined on a parent directory. Now, HDFS can ignore the umask in these cases for improved compliance with POSIX. This behavior is on by default due to the inclusion of [HDFS-11957](#). It can be configured by `settingdfs.namenode.posix.acl.inheritance.enabled` in `hdfs-site.xml`. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-11957](#) changes the default behavior of ACL inheritance introduced by [HDFS-6962](#). Previously, the behavior was disabled by default. Now, the feature is enabled by default. Any code expecting the old ACL inheritance behavior will have to be updated. See the Apache Hadoop HDFS Permissions Guide for more information.
- [HDFS-6252](#) removed `dfshealth.jsp` since it is part of the old NameNode web UI. By default, Cloudera Manager links to the new NameNode web UI, which has an equivalent health page at `dfshealth.html`.
- [HDFS-11100](#) changes the behavior of deleting files protected by a sticky bit. Now, the deletion fails.
- [HDFS-10689](#) changes the behavior of the `hdfs dfs chmod` command. Now, the command resets sticky bit permission on a file/directory when the leading sticky bit is omitted in the octal mode (like 644). When a file or directory permission is applied using octal mode and sticky bit permission needs to be preserved, then it has to be explicitly mentioned in the permission bits (like 1644).
- [HDFS-10650](#) changes the behavior of `DFSClient#mkdirs` and `DFSClient#primitiveMkdir`. Previously, they create a new directory with the default permissions 00666. Now, they will create a new directory with permission 00777.
- [HADOOP-8143](#) changes the default behavior of `distcp`. Previously, the `-pb` option was not used by default, which may have caused some checksums to fail when block sizes did not match. Now, the `-pb` option is included by default to preserve block size when using `distcp`.
- [HADOOP-10950](#) changes several heap management variables:
 - `HADOOP_HEAPSIZE` variable has been deprecated. Use `HADOOP_HEAPSIZE_MAX` and `HADOOP_HEAPSIZE_MIN` instead to set `Xmx` and `Xms`
 - The internal variable `JAVA_HEAP_MAX` has been removed.
 - Default heap sizes have been removed. This will allow for the JVM to use auto-tuning based upon the memory size of the host. To re-enable the old default, configure `HADOOP_HEAPSIZE_MAX="1g"` in `hadoop-env.sh`.

- All global and daemon-specific heap size variables now support units. If the variable is only a number, the size is assumed to be in megabytes.
- [HADOOP-14426](#) upgrades the version of Kerby from 1.0.0-RC2 to 1.0.0
- [HDFS-10970](#) updates the version of Jackson from 1.9.13 to 2.x in `hadoop-hdfs`.
- [HADOOP-9613](#) updates the Jersey version to the latest 1.x release.
- [HADOOP-10101](#) updates Guava dependency to 21.0
- [HADOOP-14225](#) removes the `xmlenc` dependency. If you rely on the transitive dependency, you need to set the dependency explicitly in your code after this change.
- [HADOOP-13382](#) remove unneeded `commons-httpclient` dependencies from POM files in Hadoop and sub-projects. This incompatible change may affect projects that have undeclared transitive dependencies on `commons-httpclient`, which used to be provided by `hadoop-common` or `hadoop-client`.
- [HADOOP-13660](#) upgrades the `commons-configuration` version from 1.6 to 2.1.
- [HADOOP-12064](#) upgrades the following dependencies:
 - Guice from 3.0 to 4.0
 - cglib from 2.2 to 3.2.0
 - asm from 3.2 to 5.0.4

MapReduce

- Support for MapReduce v1 has been dropped from CDH 6.0.0.
- CDH 6 supports applications compiled against CDH 5.7.0 and higher MapReduce frameworks. Make sure to not include the CDH jars with your application by marking them as "provided" in the `pom.xml` file.

YARN

Changed default location of container executor binary

The default location of container-executor binary and `.cfg` files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`.

Apache HBase

CDH 6.0.0 contains the following downstream HBase incompatible change:

hbase.security.authorization

The default value for `hbase.security.authorization` has been changed from `true` to `false`. Secured clusters should make sure to explicitly set it to `true` in XML configuration file before upgrading to one of these versions ([HBASE-19483](#)). True as the default value of `hbase.security.authorization` was changed because not all clusters need authorization. (History: [HBASE-13275](#)) Rather, only the clusters which need authorization should set this configuration as `true`.

Incompatible Changes

For more information about upstream incompatible changes, see the Apache Reference Guide [Incompatible Changes](#) and [Upgrade Paths](#).

CDH 6.0.0 contains the following upstream HBase incompatible changes:

- Public interface API changes:
 - [HBASE-15607](#): Admin
 - [HBASE-19112](#), [HBASE-18945](#): Cell
 - Region, Store, `HBaseTestingUtility`
- [HBASE-18792](#): `hbase-2` needs to defend against `hbck` operations
- [HBASE-15982](#): Interface `ReplicationEndpoint` extends Guava's `Service`.
- [HBASE-18995](#): Split `CellUtil` into public `CellUtil` and `PrivateCellUtil` for Internal use only.
- [HBASE-19179](#): Purged the `hbase-prefix-tree` module and all references from the code base.

- [HBASE-17595](#): Add partial result support for small/limited scan; Now small scan and limited scan could also return partial results.
- [HBASE-16765](#): New default split policy, SteppingSplitPolicy.
- [HBASE-17442](#): Move most of the replication related classes from hbase-client to hbase-replication package.
- [HBASE-16196](#): The bundled JRuby 1.6.8 has been updated to version 9.1.9.0.
- [HBASE-18811](#): Filters have been moved from Public to LimitedPrivate.
- [HBASE-18697](#): Replaced hbase-shaded-server jar with hbase-shaded-mapreduce jar.
- [HBASE-18640](#): Moved mapreduce related classes out of hbase-server into separate hbase-mapreduce jar .
- [HBASE-19128](#): Distributed Log Replay feature has been removed.
- [HBASE-19176](#): Hbase-native-client has been removed.
- [HBASE-17472](#): Changed semantics of granting new permissions. Earlier, new grants would override previous permissions, but now, the new and existing permissions get merged.
- [HBASE-18374](#): Previous "mutate" latency metrics has been renamed to "put" metrics.
- [HBASE-15740](#): Removed Replication metric source.shippedKBs in favor of source.shippedBytes.
- [HBASE-13849](#): Removed restore and clone snapshot from the WebUI.
- [HBASE-13252](#): The concept of managed connections in HBase (deprecated before) has now been extinguished completely, and now all callers are responsible for managing the lifecycle of connections they acquire.
- [HBASE-14045](#): Bumped thrift version to 0.9.2.
- [HBASE-5401](#): Changes to number of tasks PE runs when clients are mapreduce. Now tasks == client count. Previous we hardcoded ten tasks per client instance.

Changed Behavior

CDH 6.0.0 contains the following HBase behavior changes:

- [HBASE-14350](#): Assignment Manager v2 - Split/Merge have moved to the Master; it runs them now. Hooks around Split/Merge are now noops. To intercept Split/Merge phases, CPs need to intercept on MasterObserver.
- [HBASE-18271](#): Moved to internal shaded netty.
- [HBASE-17343](#): Default MemStore to be CompactingMemStore instead of DefaultMemStore. In-memory compaction of CompactingMemStore demonstrated sizable improvement in HBase's write amplification and read/write performance.
- [HBASE-19092](#): Make Tag IA.LimitedPrivate and expose for CPs.
- [HBASE-18137](#): Replication gets stuck for empty WALs.
- [HBASE-17513](#): Thrift Server 1 uses different QOP settings than RPC and Thrift Server 2 and can easily be misconfigured so there is no encryption when the operator expects it.
- [HBASE-16868](#): Add a replicate_all flag to replication peer config. The default value is true, which means all user tables (REPLICATION_SCOPE != 0) will be replicated to peer cluster.
- [HBASE-19341](#): Ensure Coprocessors can abort a server.
- [HBASE-18469](#): Correct RegionServer metric of totalRequestCount.
- [HBASE-17125](#): Marked Scan and Get's setMaxVersions() and setMaxVersions(int) as deprecated. They are easy to misunderstand with column family's max versions, so use readAllVersions() and readVersions(int) instead.
- [HBASE-16567](#): Core is now up on protobuf 3.1.0 (Coprocessor Endpoints and REST are still on protobuf 2.5.0).
- [HBASE-14004](#): Fix inconsistency between Memstore and WAL which may result in data in remote cluster that is not in the origin (Replication).
- [HBASE-18786](#): FileNotFoundException opening a StoreFile in a primary replica now causes a RegionServer to crash out where before it would be ignored (or optionally handled via close/reopen).
- [HBASE-17956](#): Raw scans will also read TTL expired cells.
- [HBASE-17017](#): Removed per-region latency histogram metrics.
- [HBASE-19483](#): Added ACL checks to RSGroup commands - On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands.
- [HBASE-19358](#): Added ACL checks to RSGroup commands (HBASE-19483): On a secure cluster, only users with ADMIN rights will be able to execute RSGroup commands. Improved stability of splitting log when do failover.
- [HBASE-18883](#): Updated our Curator version to 4.0 - Users who experience classpath issues due to version conflicts are recommended to use either the hbase-shaded-client or hbase-shaded-mapreduce artifacts.

| one.col_1 | one.col_2 | one.col_3 |
|-----------|-----------|-----------|
| 21 | hello_all | b |

Where `col_1` datatype is `int`, `col_2` datatype is `string`, and `col_3` datatype is `char(1)`.

Table "two"

| two.col_4 | two.col_5 | two.col_6 |
|-----------|-----------|-----------|
| 75.0 | abcde | 45 |

Where `col_4` datatype is `double`, `col_5` datatype is `varchar(5)`, and `col_6` datatype is `int`.

And you ran the following `UNION ALL` query against these two tables:

```
SELECT * FROM one UNION ALL SELECT col_4 AS col_1, col_5 AS col_2, col_6 AS col_3 FROM two;
```

You received the following result set:

| _u1.col_1 | _u1.col_2 | _u1.col_3 |
|-----------|-----------|-----------|
| 75.0 | abcde | 4 |
| 21.0 | hello | b |

Note that this statement implicitly casts the values from table `one` with the following errors resulting in data loss:

- `one.col_1` is cast to a `double` datatype
- `one.col_2` is cast to a `varchar(5)` datatype, which truncates the original value from `hello_all` to `hello`
- `one.col_3` is cast to a `char(1)` datatype, which truncates the original value from `45` to `4`

In CDH 6.0, no implicit cast is performed across different type groups. For example, `STRING`, `CHAR`, and `VARCHAR` are in one type group, and `INT`, `BIGINT`, and `DECIMAL` are in another type group, and so on. So, in CDH 6.0 and later, the above query that uses `UNION ALL`, returns an exception for the columns that contain datatypes that are not part of a type group. In CDH 6.0 and later, Hive performs the implicit cast only *within* type groups and not *across* different type groups. For more information, see [HIVE-14251](#).

Support for UNION DISTINCT

Support has been added for the `UNION DISTINCT` clause in Hive. See [HIVE-9039](#) and [the Apache wiki](#) for more details. This feature introduces the following incompatible changes to Hive:

- **Behavior in CDH 5:**
 - `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses either before a `UNION ALL` clause or at the end of the query, resulting in the following behaviors:
 - When specified before, these clauses are applied to the query before `UNION ALL` is applied.
 - When specified at the end of the query, these clauses are applied to the query after `UNION ALL` is applied.
 - The `UNION` clause is equivalent to `UNION ALL`, in which no duplicates are removed.

- **Behavior in CDH 6:**

- `SORT BY`, `CLUSTER BY`, `ORDER BY`, `LIMIT`, and `DISTRIBUTE BY` can be specified without delineating parentheses *only* at the end of the query, resulting in the following behaviors:
 - These clauses are applied to the entire query.
 - Specifying these clauses before the `UNION ALL` clause results in a parsing error.
- The `UNION` clause is equivalent to `UNION DISTINCT`, in which all duplicates are removed.

OFFLINE and NO_DROP Options Removed from Table and Partition DDL

Support for Hive table and partition protection options have been removed in CDH 6.0, which includes removal of the following functionality:

- Support has been removed for:

- `ENABLE | DISABLE NO_DROP [CASCADE]`
- `ENABLE | DISABLE OFFLINE`
- `ALTER TABLE ... IGNORE PROTECTION`

- The following support has also been removed from the `HiveMetastoreClient` class:

The `ignoreProtection` parameter has been removed from the `dropPartitions` methods in the `IMetaStoreClient` interface.

For more information, see [HIVE-11145](#).

Cloudera recommends that you use Apache Sentry to replace most of this functionality. Although Sentry governs permissions on `ALTER TABLE`, it does not include permissions that are specific to a partition. See [Authorization Privilege Model for Hive and Impala](#) and [Configuring the Sentry Service](#).

DESCRIBE Query Syntax Change

In CDH 6.0 syntax has changed for `DESCRIBE` queries as follows:

- `DESCRIBE` queries where the column name is separated by the table name using a period is no longer supported:

```
DESCRIBE testTable.testColumn;
```

Instead, the table name and column name must be separated with a space:

```
DESCRIBE testTable testColumn;
```

- The `partition_spec` must appear *after* the table name, but *before* the optional column name:

```
DESCRIBE default.testTable PARTITION (part_col = 100) testColumn;
```

For more details, see the [Apache wiki](#) and [HIVE-12184](#).

CREATE TABLE Change: Periods and Colons No Longer Allowed in Column Names

In CDH 6.0, `CREATE TABLE` statements fail if any of the specified column names contain a period or a colon. For more information, see [HIVE-10120](#) and the [Apache wiki](#).

Reserved and Non-Reserved Keyword Changes in HiveQL

Hive reserved and non-reserved keywords have changed in CDH 6.0. *Reserved keywords* cannot be used as table or column names unless they are enclosed with back ticks (for example, `data`). *Non-reserved keywords* can be used as

table or column names without enclosing them with back ticks. Non-reserved keywords have proscribed meanings in HiveQL, but can still be used as table or column names. For more information about the changes to reserved and non-reserved words listed below, see [HIVE-6617](#) and [HIVE-14872](#).

In CDH 6.0, the following changes have been introduced to Hive reserved and non-reserved keywords and are not backwards compatible:

- [Hive New Reserved Keywords Added in CDH 6.0](#) on page 1251
- [Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0](#) on page 1251
- [Hive New Non-Reserved Keywords Added in CDH 6.0](#) on page 1252
- [Hive Non-Reserved Keyword Removed in CDH 6.0](#) on page 1252

Hive New Reserved Keywords Added in CDH 6.0

The following table contains new reserved keywords that have been added:

| | | | |
|---------|------------|------------|----------|
| COMMIT | CONSTRAINT | DEC | EXCEPT |
| FOREIGN | INTERVAL | MERGE | NUMERIC |
| ONLY | PRIMARY | REFERENCES | ROLLBACK |
| START | | | |

Hive Non-Reserved Keywords Converted to Reserved Keywords in CDH 6.0

The following table contains non-reserved keywords that have been converted to be reserved keywords:

| | | | |
|---------------|----------|-----------|-----------|
| ALL | ALTER | ARRAY | AS |
| AUTHORIZATION | BETWEEN | BIGINT | BINARY |
| BOOLEAN | BOTH | BY | CREATE |
| CUBE | CURSOR | DATE | DECIMAL |
| DOUBLE | DELETE | DESCRIBE | DROP |
| EXISTS | EXTERNAL | FALSE | FETCH |
| FLOAT | FOR | FULL | GRANT |
| GROUP | GROUPING | IMPORT | IN |
| INT | INNER | INSERT | INTERSECT |
| INTO | IS | LATERAL | LEFT |
| LIKE | LOCAL | NONE | NULL |
| OF | ORDER | OUT | OUTER |
| PARTITION | PERCENT | PROCEDURE | RANGE |
| READS | REGEXP | REVOKE | RIGHT |
| RLIKE | ROLLUP | ROW | ROWS |
| SET | SMALLINT | TABLE | TIMESTAMP |
| TO | TRIGGER | TRUNCATE | UNION |
| UPDATE | USER | USING | VALUES |
| WITH | TRUE | | |

Hive Reserved Keywords Converted to Non-Reserved Keywords in CDH 6.0

The following table contains reserved keywords that have been converted to be non-reserved keywords:

| | | | |
|--------------|-------------------|--------------|----------|
| CURRENT_DATE | CURRENT_TIMESTAMP | HOLD_DDLTIME | IGNORE |
| NO_DROP | OFFLINE | PROTECTION | READONLY |

Hive New Non-Reserved Keywords Added in CDH 6.0

The following table contains new non-reserved keywords that have been added:

| | | | |
|------------|---------------|---------|-------------|
| ABORT | AUTOCOMMIT | CACHE | DAY |
| DAYOFWEEK | DAYS | DETAIL | DUMP |
| EXPRESSION | HOUR | HOURS | ISOLATION |
| KEY | LAST | LEVEL | MATCHED |
| MINUTE | MINUTES | MONTH | MONTHS |
| NORELY | NOVALIDATE | NULLS | OFFSET |
| OPERATOR | RELY | SECOND | SECONDS |
| SNAPSHOT | STATUS | SUMMARY | TRANSACTION |
| VALIDATE | VECTORIZATION | VIEWS | WAIT |
| WORK | WRITE | YEAR | YEARS |

Hive Non-Reserved Keyword Removed in CDH 6.0

The following non-reserved keyword has been removed:

| |
|---------|
| DEFAULT |
|---------|

Apache Hive API Changes in CDH 6.0.0

The following changes have been introduced to the Hive API in CDH 6.0, and are not backwards compatible:

- [AddPartitionMessage.getPartitions\(\) Can Return NULL](#) on page 1252
- [DropPartitionEvent and PreDropPartitionEvent Class Changes](#) on page 1252
- [GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date](#) on page 1252
- [GenericUDF.getConstantLongValue Has Been Removed](#) on page 1253
- [Increased Width of Hive Metastore Configuration Columns](#) on page 1253

AddPartitionMessage.getPartitions() Can Return NULL

The `getPartitions()` method has been removed from the `AddPartitionEvent` class in the `org.apache.hadoop.hive.metastore.events` interface. It was removed to prevent out-of-memory errors when the list of partitions is too large.

Instead use the `getPartitionIterator()` method. For more information, see [HIVE-9609](#) and the [AddPartitionEvent documentation](#).

DropPartitionEvent and PreDropPartitionEvent Class Changes

The `getPartitions()` method has been removed and replaced by the `getPartitionIterator()` method in the `DropPartitionEvent` class and the `PreDropPartitionEvent` class.

In addition, the `(Partition partition, boolean deleteData, HiveMetastore.HMSHandler handler)` constructors have been deleted from the `PreDropPartitionEvent` class. For more information, see [HIVE-9674](#) and the [PreDropPartitionEvent documentation](#).

GenericUDF.getTimestampValue Method Now Returns Timestamp Instead of Date

The `getTimestampValue` method in the `GenericUDF` class now returns a `TIMESTAMP` value instead of a `DATE` value. For more information, see [HIVE-10275](#) and the [GenericUDF documentation](#).

GenericUDF.getConstantLongValue Has Been Removed

The `getConstantLongValue` method has been removed from the `GenericUDF` class. It has been noted by the community that this method is not used in Hive. For more information, see [HIVE-10710](#) and the [GenericUDF documentation](#).

Increased Width of Hive Metastore Configuration Columns

The columns used for configuration values in the Hive metastore have been increased in width, resulting in the following incompatible changes in the `org.apache.hadoop.hive.metastore.api` interface.

This change introduced an incompatible change to the `get_table_names_by_filter` method of the `ThriftHiveMetastore` class. Before this change, this method accepts a `string` filter, which allows clients to filter a table by its `TABLEPROPERTIES` value. For example:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 <> \"yellow\"";

org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 = \"yellow\"";
```

After this change, the `TABLE_PARAMS.PARAM_VALUE` column is now a `CLOB` data type. Depending on the type of database that you use (for example, MySQL, Oracle, or PostgreSQL), the semantics may have changed and operators like "=", "<>", and "!=" might not be supported. Refer to the documentation for your database for more information. You must use operators that are compatible with `CLOB` data types. There is no equivalent "<>" operator that is compatible with `CLOB`. So there is no equivalent operator for the above example that uses the "<>" inequality operator. The equivalent for "=" is the `LIKE` operator so you would rewrite the second example above as:

```
org.apache.hadoop.hive.metastore.api.hive_metastoreConstants.HIVE_FILTER_FIELD_
PARAMS + "test_param_1 LIKE \"yellow\"";
```

For more information, see [HIVE-12274](#).

Apache Hive Configuration Changes in CDH 6.0.0

The following configuration property changes have been introduced to Hive in CDH 6.0, and are not backwards compatible:

- [Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables](#) on page 1253
- [Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters](#) on page 1253
- [Hive Strict Checks Have Been Re-factored To Be More Granular](#) on page 1254
- [Java XML Serialization Has Been Removed](#) on page 1255
- [Configuration Property Enabling Column Position Usage with `GROUP BY` and `ORDER BY` Separated into Two Properties](#) on page 1255
- [HiveServer2 Impersonation Property \(`hive.server2.enable.impersonation`\) Removed](#) on page 1255
- [Changed Default File Format for Storing Intermediate Query Results](#) on page 1256

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on `hive.enforce.bucketing`](#) and the [topic on `hive.enforce.sorting`](#).

Hive Throws an Exception When Processing HDFS Directories Containing Unsupported Characters

Directories in HDFS can contain unprintable or unsupported characters that are not visible even when you run the `hadoop fs -ls` command on the directories. When external tables are created with the `MSCK REPAIR TABLE` command, the partitions using these HDFS directories that contain unsupported characters are unusable for Hive. To avoid this, the configuration parameter `hive.msck.path.validation` has been added. This configuration property controls the behavior of the `MSCK REPAIR TABLE` command, enabling you to set whether validation checks are run on the HDFS directories when `MSCK REPAIR TABLE` is run.

The property `hive.msck.path.validation` can be set to one of the following values:

| Value Name | Description |
|------------|---|
| throw | Causes Hive to throw an exception when it tries to process an HDFS directory that contains unsupported characters with the <code>MSCK REPAIR TABLE</code> command. This is the default setting for <code>hive.msck.path.validation</code> . |
| skip | Causes Hive to skip the skip the directories that contain unsupported characters, but still repairs the others. |
| ignore | Causes Hive to completely skip any validation of HDFS directories when the <code>MSCK REPAIR TABLE</code> command is run. This setting can cause bugs because unusable partitions are created. |

By default, the `hive.msck.path.validation` property is set to `throw`, which causes Hive to throw an exception when `MSCK REPAIR TABLE` is run and HDFS directories containing unsupported characters are encountered. To work around this, set this property to `skip` until you can repair the HDFS directories that contain unsupported characters.

To set this property in Cloudera Manager:

1. In the Admin Console, select the Hive service.
2. Click the **Configuration** tab.
3. Search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting.
4. In the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting, add the **Name** of the property, the **Value** (`throw`, `skip`, or `ignore`), and a **Description** of the setting.
5. Click **Save Changes** and restart the service.

For more information, see [HIVE-10722](#).

Hive Strict Checks Have Been Re-factored To Be More Granular

Originally, the configuration property `hive.mapred.mode` was added to restrict certain types of queries from running. Now it has been broken down into more fine-grained configurations, one for each type of restricted query pattern. The configuration property `hive.mapred.mode` has been removed and replaced with the following configuration properties, which provide more granular control of Hive strict checks:

| Configuration Property | Description | Default Value |
|---|--|--|
| <code>hive.strict.checks.bucketing</code> | When set to <code>true</code> , running <code>LOAD DATA</code> queries against bucketed tables is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.type.safety</code> | When set to <code>true</code> , comparing <code>bigint</code> to <code>string</code> data types or <code>bigint</code> to <code>double</code> data types is not allowed. | <code>true</code> . This is a backwards incompatible change. |
| <code>hive.strict.checks.orderby.no.limit</code> | When set to <code>true</code> , prevents queries from being run that contain an <code>ORDER BY</code> clause with no <code>LIMIT</code> clause. | <code>false</code> |
| <code>hive.strict.checks.no.partition.filter</code> | When set to <code>true</code> , prevents queries from being run that scan a partitioned | <code>false</code> |

| Configuration Property | Description | Default Value |
|---|--|--------------------|
| | table but do not filter on the partition column. | |
| <code>hive.strict.checks.cartesian.product</code> | When set to <code>true</code> , prevents queries from being run that contain a Cartesian product (also known as a cross join). | <code>false</code> |

All of these properties can be set with Cloudera Manager in the following configuration settings for the Hive service:

- **Restrict LOAD Queries Against Bucketed Tables** (`hive.strict.checks.bucketing`)
- **Restrict Unsafe Data Type Comparisons** (`hive.strict.checks.type.safety`)
- **Restrict Queries with ORDER BY but no LIMIT clause** (`hive.strict.checks.orderby.no.limit`)
- **Restrict Partitioned Table Scans with no Partitioned Column Filter** (`hive.strict.checks.no.partition.filter`)
- **Restrict Cross Joins (Cartesian Products)** (`hive.strict.checks.cartesian.product`)

For more information about these configuration properties, see [HIVE-12727](#), [HIVE-15148](#), [HIVE-18251](#), and [HIVE-18552](#).

Java XML Serialization Has Been Removed

The configuration property `hive.plan.serialization.format` has been removed. Previously, this configuration property could be set to either `javaXML` or `kryo`. Now the default is `kryo` serialization, which cannot be changed. For more information, see [HIVE-12609](#) and the [Apache wiki](#).

Configuration Property Enabling Column Position Usage with GROUP BY and ORDER BY Separated into Two Properties

The configuration property `hive.groupby.orderby.position.alias`, which enabled using column position with the `GROUP BY` and the `ORDER BY` clauses has been removed and replaced with the following two configuration properties. These configuration properties enable using column position with `GROUP BY` and `ORDER BY` separately:

| Configuration Property Name | Description/Default Setting | Possible Values |
|--|--|--|
| <code>hive.groupby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>GROUP BY</code> clauses in queries. Default Setting: <code>false</code> . This behavior is turned off by default. | <code>true</code> <code>false</code> |
| <code>hive.orderby.position.alias</code> | When set to <code>true</code> , specifies that columns can be referenced with their position when using <code>ORDER BY</code> clauses in queries. Default Setting: <code>true</code> . This behavior is turned on by default. | <code>true</code> <code>false</code> |

For more information, see [HIVE-15797](#) and the Apache wiki entries for [configuration properties](#), [GROUP BY syntax](#), and [ORDER BY syntax](#).

HiveServer2 Impersonation Property (`hive.server2.enable.impersonation`) Removed

In earlier versions of CDH, the following two configuration properties could be used to set impersonation for HiveServer2:

- `hive.server2.enable.impersonation`
- `hive.server2.enable.doAs`

In CDH 6.0, `hive.server2.enable.impersonation` is removed. To configure impersonation for HiveServer2, use the configuration property `hive.server2.enable.doAs`. To set this property in Cloudera Manager, select the Hive service and click on the **Configuration** tab. Then search for the **HiveServer2 Enable Impersonation** setting and select the checkbox to enable HiveServer2 impersonation. This property is enabled by default in CDH 6.

For more information about this property, see the [Apache wiki documentation for HiveServer2 configuration properties](#).

Changed Default File Format for Storing Intermediate Query Results

The configuration property `hive.query.result.fileformat` controls the file format in which a query's intermediate results are stored. In CDH 6, the default setting for this property has been changed from `TextFile` to `SequenceFile`.

To change this configuration property in Cloudera Manager:

1. In the Admin Console, select the Hive service and click on the **Configuration** tab.
2. Then search for the **Hive Service Advanced Configuration Snippet (Safety Valve) for hive-site.xml** setting and add the following information:
 - **Name:** `hive.query.result.fileformat`
 - **Value:** Valid values are `TextFile`, `SequenceFile` (default), or `RCfile`
 - **Description:** Sets the file format in which a query's intermediate results are stored.
3. After you add this information, click **Save Changes** and restart the Hive service.

For more information about this parameter, see the [Apache wiki](#).

HiveServer2 Thrift API Code Repackaged Resulting in Class File Location Changes

HiveServer2 Thrift API code has been repackaged in CDH 6.0, resulting in the following changes:

- All files generated by the Thrift API for HiveServer2 have moved from the following *old* namespace:

```
org.apache.hive.service.cli.thrift
```

To the following *new* namespace:

```
org.apache.hive.service.rpc.thrift
```

- All files generated by the Thrift API for HiveServer2 have moved into a separate jar file called `service-rpc`.

As a result of these changes, all Java classes such as `TCLIService.java`, `TOpenSessionReq.java`, `TSessionHandle.java`, and `TGetSchemasReq.java` have changed locations. For more information, see [HIVE-12442](#).

Values Returned for Decimal Numbers Are Now Padded with Trailing Zeroes to the Scale of the Specified Column

Decimal values that are returned in query results are now padded with trailing zeroes to match the specified scale of the corresponding column. For example, *before* this change, when Hive read a decimal column with a specified scale of 5, the value returned for zero was returned as 0. *Now*, the value returned for zero is 0.00000. For more information, see [HIVE-12063](#).

Hive Logging Framework Switched to SLF4J/Log4j 2

The logging framework for Hive has switched to [SLF4J \(Simple Logging Facade for Java\)](#) and now uses [Log4j 2](#) by default. Use of Log4j 1.x, Apache Commons Logging, and `java.util.logging` have been removed. To accommodate this change, write all Log4j configuration files to be compatible with Log4j 2.

For more information, see [HIVE-12237](#), [HIVE-11304](#), and the [Apache wiki](#).

Deprecated Parquet Java Classes Removed from Hive

The deprecated parquet classes, `parquet.hive.DeprecatedParquetInputFormat` and `parquet.hive.DeprecatedParquetOutputFormat` have been removed from Hive because they resided outside of the `org.apache` namespace. Any existing tables that use these classes are automatically migrated to the new SerDe classes when the metastore is upgraded.

Use one of the following options for specifying the Parquet SerDe for new Hive tables:

- Specify in the `CREATE TABLE` statement that you want it stored as Parquet. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING) STORED AS PARQUET;
```

- Set the `INPUTFORMAT` to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat` and set the `OUTPUTFORMAT` to `org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat`. For example:

```
CREATE TABLE <parquet_table_name> (col1 INT, col2 STRING)
STORED AS
  INPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetInputFormat"
  OUTPUTFORMAT "org.apache.hadoop.hive.ql.io.parquet.MapredParquetOutputFormat";
```

For more information, see [HIVE-6757](#) and the [Apache wiki](#).

Removed JDBC, Counter-based, and HBase-based Statistics Collection Mechanisms

Support for JDBC, counter-based, and HBase-based statistics collection mechanisms has been removed from Hive. The following configuration properties are no longer supported:

- `hive.stats.dbclass`
- `hive.stats.retries.wait`
- `hive.stats.retries.max`
- `hive.stats.jdbc.timeout`
- `hive.stats.dbconnectionstring`
- `hive.stats.jdbcdrive`
- `hive.stats.key.prefix.reserve.length`

This change also removed the `cleanUp(String keyPrefix)` method from the [StatsAggregator interface](#).

Now all Hive statistics are collected on the default file system. For more information, see [HIVE-12164](#), [HIVE-12411](#), [HIVE-12005](#), and the [Apache wiki](#).

S3N Connector Is Removed from CDH 6.0

The [S3N connector](#), which is used to connect to the Amazon S3 file system from Hive has been removed from CDH 6.0. To connect to the S3 file system from Hive in CDH 6.0, you must now use the S3A connector. There are a number of differences between the S3N and the S3A connectors, including configuration differences. See the [Apache wiki page on integrating with Amazon Web Services](#) for details.

Migration involves making the following changes:

- Changing all metastore data containing URIs that start with `s3n://` to `s3a://`. This change is performed automatically when you upgrade the Hive metastore.
- Changing all scripts containing URIs that start with `s3n://` to `s3a://`. You must perform this change manually.

Columns Added to TRowSet Returned by the Thrift TCLIService#GetTables Request

Six additional columns have been added to the `TRowSet` that is returned by the `TCLIService#GetTables` request. These columns were added to comply with the official JDBC API. For more information, see the documentation for [java.sql.DatabaseMetaData](#).

The columns added are:

| Column Name | Description |
|---------------------------|--|
| REMARKS | Explanatory comment on the table. |
| TYPE_CAT | Types catalog. |
| TYPE_SCHEMA | Types schema. |
| TYPE_NAME | Types name. |
| SELF_REFERENCING_COL_NAME | Name of the designed identifier column of a typed table. |

| Column Name | Description |
|----------------|---|
| REF_GENERATION | Specifies how values in the SELF_REFERENCING_COL_NAME column are created. |

For more information, see [HIVE-7575](#).

Support Added for Escaping Carriage Returns and New Line Characters for Text Files (LazySimpleSerDe)

Support has been added for escaping carriage returns and new line characters in text files by modifying the `LazySimpleSerDe` class. Without this change, carriage returns and new line characters are interpreted as delimiters, which causes incorrect query results.

This feature is controlled by the SerDe property `serialization.escape.crlf`. It is enabled (set to `true`) by default. If `serialization.escape.crlf` is enabled, 'r' or 'n' cannot be used as separators or field delimiters.

This change only affects text files and removes the `getNullString` method from the [LazySerDeParameters class](#). For more information, see [HIVE-11785](#).

Bucketing and Sorting Enforced by Default When Inserting Data into Hive Tables

The configuration properties `hive.enforce.sorting` and `hive.enforce.bucketing` have been removed. When set to `false`, these configurations disabled enforcement of sorted and bucketed tables when data was inserted into a table. Removing these configuration properties effectively sets these properties to `true`. In CDH 6.0, bucketing and sorting are enforced on Hive tables during insertions and cannot be turned off. For more information, see the Apache wiki [topic on hive.enforce.bucketing](#) and the [topic on hive.enforce.sorting](#).

Hue

There are no incompatible changes in this release.

Apache Impala

List of Reserved Words Updated

The list of [reserved words](#) in Impala was updated in CDH 6.0.

If you need to use the reserved words from previous versions of CDH, set the `impalad` and `catalogd` startup option, `reserved_words_version`, to "2.11.0".

Decimal V2 Used by Default

In Impala, two different behaviors of `DECIMAL` types are supported. In CDH 6.0, `DECIMAL V2` is used by default. See [DECIMAL Type](#) for detail information.

If you need to continue using the first version of the `DECIMAL` type for the backward compatibility of your queries, set the [DECIMAL_V2](#) query option to `FALSE`.

Behavior of Column Aliases Changed

To conform to the SQL standard, Impala no longer performs alias substitution in the subexpressions of `GROUP BY`, `HAVING`, and `ORDER BY`.

For example, the following statements will now result in syntax errors.

```
SELECT int_col / 2 AS x
FROM functional.alltypes
GROUP BY x / 2;

SELECT int_col / 2 AS x
FROM functional.alltypes
ORDER BY -x;

SELECT int_col / 2 AS x
FROM functional.alltypes
GROUP BY x
HAVING x > 3;
```

Default PARQUET_ARRAY_RESOLUTION Changed

The `PARQUET_ARRAY_RESOLUTION` query option controls the path-resolution behavior for Parquet files with nested arrays. The default value for the `PARQUET_ARRAY_RESOLUTION` was changed to `THREE_LEVEL` in CDH 6.0. Review your queries to see if the default value change result in different result sets.

See [PARQUET_ARRAY_RESOLUTION Query Option](#) for the information about the option.

Non-standard Timezone Names Unsupported

As the initial step for IANA timezone integration in the coming release, Impala will drop the support for non-standard timezone aliases in CDH 6.0.

Impala supports a majority of the [IANA time zones](#) with the following exceptions of time zones not supported: America/Fort_Nelson, America/Punta_Arenas, Asia/Atyrau, Asia/Barnaul, Asia/Famagusta, Asia/Tomsk, Asia/Yangon, Europe/Astrakhan, Europe/Kirov, Europe/Saratov, Europe/Ulyanovsk, GMT+0, GMT-0, ROC

See [Unsupported Time Zone](#) for the list of time zone aliases no longer supported and the canonical names you can use to replace the unsupported aliases with.

Return Type Changed for EXTRACT and DATE_PART Functions in CDH 6.0 / Impala 3.0

The following changes were made to the `EXTRACT` and `DATE_PART` functions:

- The output type of the `EXTRACT` and `DATE_PART` functions was changed to `BIGINT`.
- Extracting the millisecond part from a `TIMESTAMP` returns the seconds component and the milliseconds component. For example, `EXTRACT (CAST('2006-05-12 18:27:28.123456789' AS TIMESTAMP), 'MILLISECOND')` will return 28123.

Apache Kafka

Kafka is now bundled as part of CDH. The following sections describe incompatible changes between the previous, separately installed Kafka (CDK powered by Apache Kafka version 3.1) and the CDH 6.0.0 Kafka version. These changes affect clients built with CDH 6.0.0 libraries. Cloudera recommends upgrading clients to the new release; however clients built with previous versions of Kafka will continue to function.

Packaging

CDH and previous distributions of Kafka (CDK Powered by Apache Kafka) cannot coexist in the same cluster.

Deprecated Scala-based Client API and New Java Client API

Scala-based clients are deprecated in this release and will be removed in an upcoming release.

The following Scala-based client implementations from package `kafka.*` (known as 'old clients') are deprecated and unsupported as of CDH 6.0.0:

- `kafka.consumer.*`
- `kafka.producer.*`
- `kafka.admin.*`

Client applications making use of these implementations must be migrated to corresponding Java clients available in `org.apache.kafka.*` (the 'new clients') package. Existing command line options and tools now use the new clients package.

Command Line Options Removed

Some command line tools are affected by the deprecation of old clients (see [previous entry](#)). The following options have been removed and are not recognized as valid options:

- `--new-consumer`
- `--old-consumer`
- `--old-producer`

The tools affected use the new clients.

Command Line Tools Removed

The following command line tools and runnable classes are removed:

- `kafka-replay-log-producer`
- `kafka-simple-consumer-shell`
- `kafka.tools.ReplayLogProducer`
- `kafka.tools.SimpleConsumerShell`
- `kafka.tools.ExportZkOffset`
- `kafka.tools.ImportZkOffset`
- `kafka.tools.SimpleConsumerPerformance`
- `kafka.tools.UpdateOffsetsInZK`
- `kafka.tools.VerifyConsumerRebalance`
- `kafka.tools.ProducerPerformance`

Consumer API Changes

Consumer methods invoked with unassigned partitions now raise an `IllegalStateException` instead of an `IllegalArgumentException`.

Previous versions of the Consumer method `poll(long)` would wait for metadata updates regardless of timeout parameter. This behavior is expected to change in future releases; make sure your client applications include an appropriate timeout parameter and do not rely on the previous behavior.

Exception Classes Removed

The following exceptions were deprecated in a previous release and are not thrown anymore are removed:

- `GroupCoordinatorNotAvailableException`
- `GroupLoadInProgressException`
- `NotCoordinatorForGroupException`
- `kafka.common.KafkaStorageException`

Metrics Updated

Kafka consumers' per-partition metrics were changed to use tags for topic and partition rather than the metric name. For more information see [KIP-225](#).

Apache Kudu

There are no incompatible changes in this release.

Apache Oozie

There are no incompatible changes in this release.

Apache Parquet

Packages and Group ID Renamed

As a part of the Apache incubation process, all Parquet packages and the project's group ID were renamed as follows:

| Parquet Version | 1.6.0 and lower (CDH 5.x) | 1.7.0 and higher (CDH 6.x) |
|--------------------|---------------------------|-----------------------------------|
| Java Package Names | <code>parquet.*</code> | <code>org.apache.parquet.*</code> |
| Group ID | <code>com.twitter</code> | <code>org.apache.parquet</code> |

If you directly consume the Parquet API, instead of using Parquet through Hive, Impala or other CDH component, you need to update your code to reflect these changes:

Update *.java files:

| Before | After |
|---------------------------------------|--|
| <code>import parquet.*;</code> | <code>import org.apache.parquet.*;</code> |

Update pom.xml:

| Before | After |
|---|--|
| <pre><dependency> <groupId> com.twitter </groupId> <version> \${parquet.version} </version> </dependency></pre> | <pre><dependency> <groupId> org.apache.parquet </groupId> <version> \${parquet.version} </version> </dependency></pre> |

API Methods Removed

In Parquet 1.6, a number of API methods were removed from the `parquet.hadoop.ParquetInputSplit` class that depended on reading metadata on the client side. Metadata should be read on the task side instead.

| Removed Method | New Method to Use |
|--|---|
| <code>parquet.hadoop.ParquetInputSplit.getFileSchema</code> | <code>org.apache.parquet.hadoop.api.InitContext.getFileSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getRequestSchema</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getRequestSchema</code> |
| <code>parquet.hadoop.ParquetInputSplit.getReadSupportMetadata</code> | <code>org.apache.parquet.hadoop.api.ReadSupport.ReadContext.getReadSupportMetadata</code> |
| <code>parquet.hadoop.ParquetInputSplit.getBlocks</code> | <code>org.apache.parquet.hadoop.metadata.ParquetMetadata.getBlocks</code> |
| <code>parquet.hadoop.ParquetInputSplit.getExtraMetadata</code> | - |

Apache Pig

The following change is introduced to Pig in CDH 6.0 and is not a backwards compatible change. You must modify your Pig scripts as described below.

Removal of the Apache DataFu Pig JAR from CDH 6

Apache DataFu Pig is a collection of user-defined functions that can be used with Pig for data mining and statistical analysis on large-scale data. The DataFu JAR was included in CDH 5, but due to very low adoption rates, the JAR was deprecated in CDH 5.9 and is being removed from CDH 6, starting with CDH 6.0. It is no longer supported.

Recommended Migration Strategy

A simple way to assess what DataFu functions you are using in your Pig scripts is to use the `grep` utility to search for occurrences of "datafu" in your code. When DataFu functions are used in Pig scripts, you must use a function definition entry that contains "datafu" like the following example:

```
define <function_name> datafu.pig... .<class_name>();
```

Use `grep` to search for the string "datafu" in your scripts and that will identify where the DataFu JAR is used.

Cloudera recommends migrating to Hive UDFs or operators wherever it is possible. However, if there are cases where it is impossible to replace DataFu functions with Hive functions, download the upstream version of the DataFu Pig libraries and place them on the node where the Pig front end is used. To preserve compatibility, use the version 1.1.0 JAR, which was the version included in CDH 5. You can download the JAR file [here](#). However, Cloudera does not support using this upstream DataFu JAR file.

Mapping DataFu UDFs to Hive UDFs

The following Hive UDFs map to DataFu UDFs and can be used instead in Pig scripts with the caveats that are listed:

Table 61: Hive Functions That Map to DataFu Functions

| DataFu Function (package) | Description | Hive UDF or Operator Equivalent | Caveats |
|---------------------------|---|---------------------------------|--|
| MD5 (hash) | Computes the MD5 value of a string and outputs a hex value by default. | md5 | None |
| SHA (hash) | Computes the SHA value of a string and outputs a hex value by default. | sha/sha1 | None |
| RandInt (random) | Generates a uniformly distributed integer between two bounds. | rand | None |
| VAR (stats) | Generates the variance of a set of values. | variance | None |
| Median (stats) | Computes the median for a sorted input bag. A special case of the Quantile function. | percentile(0.5) | See Limitations When Substituting Quantile and Median DataFu Functions on page 1262. |
| Quantile (stats) | Computes quantiles for a sorted input bag. | percentile | See Limitations When Substituting Quantile and Median DataFu Functions on page 1262. |
| Coalesce (util) | Returns the first non-null value from a tuple, like COALESCE in SQL. | coalesce | None |
| InUDF (util) | Similar to the SQL IN function, this function provides a convenient way to filter using a logical disjunction over many values. | IN | None |

For more information about using Hive UDFs, see https://www.cloudera.com/documentation/enterprise/latest/topics/cm_mc_hive_udf.html.

Limitations When Substituting Quantile and Median DataFu Functions

With the exception of `Median` and `Quantile` all Hive functions specified in the above table should work as expected in Pig scripts. `Median` extends `Quantile` in DataFu functions and the equivalent Hive functions have a similar relationship. However, there is an important difference in how you use `percentile` and how you use `Quantile`. The differences are summarized in the following table:

Table 62: Differences Between Usage of DataFu 'Quantile' and Hive 'percentile'

| Function: | Quantile | percentile |
|-----------------------------|----------|------------|
| Input must be sorted: | Yes | No |
| Nulls are allowed in input: | No | Yes |

| | | |
|------------------|---|---|
| Examples: | <pre> register datafu-1.2.0.jar; define median datafu.pig.stats.Quantile('0.5'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B = group A by name; C = foreach B { sorted = order A by n; generate group, flatten (median(sorted.n)); } </pre> | <pre> define percentile HiveUDAF ('percentile'); A = LOAD 'nums.txt' AS (name:chararray, n:long); B2 = foreach A generate name, n, 0.5 as perc; C2 = GROUP B2 by name; D2 = FOREACH C2 generate group, percentile (B2. (n, perc)); </pre> |
|------------------|---|---|

Although DataFu `StreamingQuantile` and `StreamingMedian` might appear to match Hive's `percentile_approx` function, Pig cannot consume `percentile_approx`.

DataFu Functions with No Hive Function or Operator Equivalent

The following general limitations apply when mapping DataFu UDFs to Hive UDFs:

- Many DataFu functions operate on a custom Pig data structure called a *bag*. No Hive UDFs can operate on Pig bags, so there are no equivalents for these DataFu functions.
- Some DataFu functions are custom functions that do not have Hive UDF equivalents. For example, the DataFu functions that calculate geographic distances, run the PageRank algorithm, or that do sampling. There are no equivalent Hive UDFs for these DataFu functions either.

Table 63: DataFu Functions with No Hive UDF Equivalent

| | | |
|----------------------------|-----------------------------|--------------------------------|
| AppendToBag (bags) | AssertUDF (util) | BagConcat (bags) |
| BagGroup (bags) | BagLeftOuterJoin (bags) | BagSplit (bags) |
| BoolToInt (util) | CountEach (bags) | DistinctBy (bags) |
| EmptyBagToNull (bags) | EmptyBagToNullFields (bags) | Enumerate (bags) |
| FirstTupleFromBag (bags) | HaversineDistInMiles (geo) | IntToBool (util) |
| MarkovPairs | NullToEmptyBag (bags) | PageRank (linkanalysis) |
| PrependToBag (bags) | ReservoirSample (sampling)* | ReverseEnumerate (bags) |
| SampleByKey (sampling)* | SessionCount (sessions) | Sessionize (sessions) |
| SetIntersect (sets) | SetUnion (sets) | SimpleRandomSample (sampling)* |
| TransposeTupleToBag (util) | UnorderedPairs (bags) | UserAgentClassify (urls) |
| WeightedSample (sampling)* | WilsonBinConf (stats) | — |

* These DataFu functions might be replaced with `TABLESAMPLE` in HiveQL. See the [Apache Hive wiki](#).

Cloudera Search

Cloudera Search in CDH 6.0 is rebased on Apache Solr 7.0, which has many incompatibilities with the 4.10 version of Apache Solr used in recent CDH 5 releases, such as the following:

- Solr 7 uses a managed schema by default. Generating an instance directory no longer generates `schema.xml`. For instructions on switching to a managed schema, see [Switching from schema.xml to Managed Schema](#) in *Apache Solr Reference Guide*.

- Creating a collection using `solrctl collection --create` without specifying the `-c <configName>` parameter now uses a default configuration set (named `_default`) instead of a configuration set with the same name as the collection. To avoid this, always specify the `-c <configName>` parameter when creating new collections.

For the full list of changes, see the upstream release notes:

- [Apache Solr 5 Release Notes](#)
- [Apache Solr 6 Release Notes](#)
- [Apache Solr 7 Release Notes](#)

Apache Sentry

Apache Sentry contains the following incompatible change in CDH 6.0.0:

- Sentry no longer supports policy file authorization. You must migrate policy files to the database-backed Sentry service before you upgrade to CDH 6.0.0 unless you are using Sentry policy files for Solr. If you are using Sentry policy files for Solr, you must migrate to the database-backed Sentry service after you upgrade.

For information about migrating policy files before you upgrade, see [Migrating from Sentry Policy Files to the Sentry Service](#). For information about migrating policy files for Solr after you upgrade, see [Migrating Sentry Privileges for Solr After Upgrading to CDH 6](#).

Apache Spark

The following sections describe changes in Spark support in CDH 6 that might require special handling during upgrades, or code changes within existing applications.

- All Spark applications built against Spark 1.6 in CDH 5 must be rebuilt against Spark 2.x in CDH 6.
- Spark 2 in CDH 6 works with Java 8, not Java 7. If this change produces any Java code incompatibilities, update your Java code and rebuild the application.
- Spark 2 in CDH 6 works with Scala 2.11, not Scala 2.10. If this change produces any Scala code incompatibilities, update your Scala code and rebuild the application.
- `HiveContext` and `SQLContext` have been removed, although those variables still work for backward compatibility. Use the `SparkSession` object to replace both of these handles.
- `DataFrames` have been removed from the Scala API. `DataFrame` is now a special case of `Dataset`.
Since compile-time type-safety in Python and R is not a language feature, the concept of `Dataset` does not apply to these languages' APIs. Instead, `DataFrame` remains the primary programming abstraction.
- Spark 2.0 and higher do not use an assembly JAR for standalone applications.
- If you have event logs created in CDH 5.3 or lower, you cannot read those logs using Spark in CDH 6.0 or higher.

Apache Sqoop

The following changes are introduced in CDH 6.0, and are not backwards compatible:

- All classes in `com.cloudera.sqoop` packages have been removed in CDH 6.0. Use the corresponding classes from `org.apache.sqoop` packages. For example, use `org.apache.sqoop.SqoopOptions` instead of `com.cloudera.sqoop.SqoopOptions`.



Note: This change only affects customers who build their own application on top of Sqoop classes. Sqoop CLI users are not affected.

- Because of changes introduced in the Sqoop metastore logic, the metastore database created by Sqoop CDH 6 cannot be used by earlier versions. The metastore database created by Sqoop CDH 5 can be used by both Sqoop CDH 5 and Sqoop CDH 6.

Require an explicit option to be specified with `--split-by` for a String column

Using the `--split-by` option with a CHAR or VARCHAR column does not always work properly, so Sqoop now requires the user to set the `org.apache.sqoop.splitter.allow_text_splitter` property to true to confirm that they are aware of this risk.

Example:

```
sqoop import -Dorg.apache.sqoop.splitter.allow_text_splitter=true --connect $MYCONN
--username $MYUSER --password $MYPSWD --table "test_table" --split-by "string_column"
```

For more information, see [SQOOP-2910](#).

Make Sqoop fail if user specifies `--direct` connector when it is not available

The `--direct` option is only supported with the following databases: MySQL, PostgreSQL, Oracle, Netezza.

In earlier releases, Sqoop silently ignored this option if it was specified for other databases, but it now throws an error.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"direct_import" --direct
```

The command fails with the following error message:

```
Was called with the --direct option, but no direct connector available.
```

For more information, see [SQOOP-2913](#).

Sqoop does not allow `--as-parquetfile` with `hcatalog` jobs or when `hive import` with `create-hive-table` is used

The `--create-hive-table` option is not supported when the user imports into Hive in Parquet format. Earlier this option was silently ignored, and the data was imported even if the Hive table existed. Sqoop will now fail if the `--create-hive-table` option is used with the `--as-parquetfile` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table
"test_table" --hive-import --as-parquetfile --create-hive-table
```

The command fails with the following error message:

```
Hive import and create hive table is not compatible with importing into ParquetFile
format.
```

For more information, see [SQOOP-3010](#).

Create fail fast for export with `--hcatalog-table <HIVE_VIEW>`

Importing into and exporting from a Hive view using HCatalog is not supported by Sqoop. A fail fast check was introduced so that now Sqoop throws a descriptive error message if the user specified a Hive view in the value of the `--hcatalog-table` option.

Example:

```
sqoop import --connect $MYCONN --username $MYUSER --password $MYPSWD --table "test_table"
--hcatalog-table "test_view"
```

The command fails with the following error message:

```
Reads/Writes from and to Views are not supported by HCatalog
```

For more information, see [SQOOP-3027](#).

Simplify Unicode character support in source files

Simplify Unicode character support in source files (introduced by [SQOOP-3074](#)) by defining explicit locales instead of using EscapeUtils. The Java source files generated by Sqoop will be encoded in UTF-8 format.

For more information, see [SQOOP-3075](#).

Columns added to MySQL after initial Sqoop import, export back to table with same schema fails

If we export from HDFS to an RDBMS table and the file on HDFS has no value for some of the columns defined in the table, Sqoop will use the values of `--input-null-string` and `--input-null-non-string` options. Earlier this scenario was not supported and Sqoop failed.

For more information, see [SQOOP-3158](#).

Sqoop fails if the user tries to encode a null value when using `--direct` connector and a MySQL database

The MySQL direct connector does not support the `--null-string`, `--null-non-string`, `--input-null-string`, and `--input-null-non-string` options. These options were silently ignored earlier, but Sqoop now throws an error if these options are used with MySQL direct imports and exports.

For more information, see [SQOOP-3206](#).

Apache Zookeeper

There are no incompatible changes in this release.

Timezone Names Unsupported in Impala in CDH 6.0.0

The following table lists the time zone names / aliases no longer supported in Impala along with the canonical names you can use to replace the unsupported aliases with.

| Deprecated | Replace with |
|------------|-------------------|
| ACDT | Australia/South |
| ACST | Australia/Darwin |
| ACWST | Australia/Eucla |
| ADT | America/Thule |
| AEDT | Australia/Sydney |
| AEST | Australia/Sydney |
| AFT | Asia/Kabul |
| AKDT | America/Anchorage |
| AKST | America/Anchorage |
| ALMT | Asia/Almaty |
| AMST | America/Cuiaba |
| AMT | Asia/Yerevan |
| ANAT | Asia/Anadyr |
| AQTT | Asia/Aqtau |
| AWST | Australia/West |
| AZOST | Atlantic/Azores |
| AZOT | Atlantic/Azores |
| AZST | Asia/Baku |
| AZT | Asia/Baku |
| Acre Time | Brazil/Acre |

| | |
|--|--------------------------------|
| Afghanistan Time | Asia/Kabul |
| Alaska Daylight Time | America/Anchorage |
| Alaska Standard Time | America/Anchorage |
| Alma-Ata Time | Asia/Almaty |
| Amazon Summer Time | America/Cuiaba |
| Amazon Time | Brazil/West |
| Anadyr Time | Asia/Anadyr |
| Aqtau Time | Asia/Aqtau |
| Aqtobe Time | Asia/Aqtobe |
| Arabia Standard Time | Asia/Aden |
| Argentine Time | America/Argentina/Buenos_Aires |
| Armenia Time | Asia/Yerevan |
| Asia/Riyadh87 | - |
| Asia/Riyadh88 | - |
| Asia/Riyadh89 | - |
| Atlantic Daylight Time | America/Thule |
| Atlantic Standard Time | America/Puerto_Rico |
| Australian Central Daylight Time (South Australia) | Australia/South |
| Australian Central Daylight Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Standard Time (Northern Territory) | Australia/Darwin |
| Australian Central Standard Time (South Australia) | Australia/South |
| Australian Central Standard Time (South Australia/New South Wales) | Australia/Yancowinna |
| Australian Central Western Standard Time | Australia/Eucla |
| Australian Eastern Daylight Time (New South Wales) | Australia/Sydney |
| Australian Eastern Daylight Time (Tasmania) | Australia/Hobart |
| Australian Eastern Daylight Time (Victoria) | Australia/Victoria |
| Australian Eastern Standard Time (New South Wales) | Australia/Sydney |
| Australian Eastern Standard Time (Queensland) | Australia/Brisbane |
| Australian Eastern Standard Time (Tasmania) | Australia/Hobart |
| Australian Eastern Standard Time (Victoria) | Australia/Victoria |
| Australian Western Standard Time | Australia/West |
| Azerbaijan Summer Time | Asia/Baku |
| Azerbaijan Time | Asia/Baku |
| Azores Summer Time | Atlantic/Azores |
| Azores Time | Atlantic/Azores |

| | |
|------------------------------|----------------------|
| BDT | Asia/Dhaka |
| BNT | Asia/Brunei |
| BOT | America/La_Paz |
| BRST | America/Sao_Paulo |
| BRT | America/Sao_Paulo |
| BTT | Asia/Thimbu |
| Bangladesh Time | Asia/Dhaka |
| Bhutan Time | Asia/Thimbu |
| Bolivia Time | America/La_Paz |
| Bougainville Standard Time | Pacific/Bougainville |
| Brasilia Summer Time | America/Sao_Paulo |
| Brasilia Time | America/Sao_Paulo |
| British Summer Time | GB |
| Brunei Time | Asia/Brunei |
| CCT | Indian/Cocos |
| CDT | America/Chicago |
| CEST | CET |
| CHADT | NZ-CHAT |
| CHAST | NZ-CHAT |
| CHOT | Asia/Choibalsan |
| CHUT | Pacific/Yap |
| CKT | Pacific/Rarotonga |
| CLST | America/Santiago |
| CLT | America/Santiago |
| COT | America/Bogota |
| CVT | Atlantic/Cape_Verde |
| CXT | Indian/Christmas |
| Canada/East-Saskatchewan | America/Regina |
| Cape Verde Time | Atlantic/Cape_Verde |
| Central African Time | Africa/Harare |
| Central Daylight Time | America/Chicago |
| Central European Summer Time | CET |
| Central European Time | CET |
| Central Indonesia Time | Asia/Makassar |
| Central Standard Time | America/Chicago |
| ChST | Pacific/Guam |

| | |
|-------------------------------|------------------------------|
| Chamorro Standard Time | Pacific/Guam |
| Chatham Daylight Time | NZ-CHAT |
| Chatham Standard Time | NZ-CHAT |
| Chile Summer Time | America/Santiago |
| Chile Time | America/Santiago |
| China Standard Time | Asia/Shanghai |
| Choibalsan Time | Asia/Choibalsan |
| Christmas Island Time | Indian/Christmas |
| Chuuk Time | Pacific/Yap |
| Cocos Islands Time | Indian/Cocos |
| Colombia Time | America/Bogota |
| Cook Is. Time | Pacific/Rarotonga |
| Coordinated Universal Time | UCT |
| Cuba Daylight Time | Cuba |
| Cuba Standard Time | Cuba |
| DAVT | Antarctica/Davis |
| DDUT | Antarctica/DumontDUrville |
| Davis Time | Antarctica/Davis |
| Dumont-d'Urville Time | Antarctica/DumontDUrville |
| EASST | Pacific/Easter |
| EAST | Pacific/Easter |
| EDT | America/Indiana/Indianapolis |
| EEST | Africa/Cairo |
| EGST | America/Scoresbysund |
| EGT | America/Scoresbysund |
| East Indonesia Time | Asia/Jayapura |
| Easter Is. Summer Time | Pacific/Easter |
| Easter Is. Time | Pacific/Easter |
| Eastern African Time | Africa/Addis_Ababa |
| Eastern Daylight Time | America/Indiana/Indianapolis |
| Eastern European Summer Time | Africa/Cairo |
| Eastern European Time | Africa/Cairo |
| Eastern Greenland Summer Time | America/Scoresbysund |
| Eastern Greenland Time | America/Scoresbysund |
| Eastern Standard Time | EST |
| Ecuador Time | America/Guayaquil |

| | |
|--|-------------------|
| FJT | Pacific/Fiji |
| FJT | Pacific/Fiji |
| FKT | Atlantic/Stanley |
| FNT | America/Noronha |
| Falkland Is. Time | Atlantic/Stanley |
| Fernando de Noronha Time | America/Noronha |
| Fiji Summer Time | Pacific/Fiji |
| Fiji Time | Pacific/Fiji |
| French Guiana Time | America/Cayenne |
| French Southern & Antarctic Lands Time | Indian/Kerguelen |
| GALT | Pacific/Galapagos |
| GAMT | Pacific/Gambier |
| GET | Asia/Tbilisi |
| GFT | America/Cayenne |
| GILT | Pacific/Tarawa |
| GMT+00:00 | GMT0 |
| GMT+01:00 | Etc/GMT-1 |
| GMT+02:00 | Etc/GMT-2 |
| GMT+03:00 | Etc/GMT-3 |
| GMT+04:00 | Etc/GMT-4 |
| GMT+05:00 | Etc/GMT-5 |
| GMT+06:00 | Etc/GMT-6 |
| GMT+07:00 | Etc/GMT-7 |
| GMT+08:00 | Etc/GMT-8 |
| GMT+09:00 | Etc/GMT-9 |
| GMT+10:00 | Etc/GMT-10 |
| GMT+11:00 | Etc/GMT-11 |
| GMT+12:00 | Etc/GMT-12 |
| GMT+13:00 | Etc/GMT-13 |
| GMT+14:00 | Etc/GMT-14 |
| GMT-01:00 | Etc/GMT+1 |
| GMT-02:00 | Etc/GMT+2 |
| GMT-03:00 | Etc/GMT+3 |
| GMT-04:00 | Etc/GMT+4 |
| GMT-05:00 | Etc/GMT+5 |
| GMT-06:00 | Etc/GMT+6 |

| | |
|-------------------------------|-------------------|
| GMT-07:00 | Etc/GMT+7 |
| GMT-08:00 | Etc/GMT+8 |
| GMT-09:00 | Etc/GMT+9 |
| GMT-10:00 | Etc/GMT+10 |
| GMT-11:00 | Etc/GMT+11 |
| GMT-12:00 | Etc/GMT+12 |
| GST | Asia/Dubai |
| GYT | America/Guyana |
| Galapagos Time | Pacific/Galapagos |
| Gambier Time | Pacific/Gambier |
| Georgia Time | Asia/Tbilisi |
| Ghana Mean Time | Africa/Accra |
| Gilbert Is. Time | Pacific/Tarawa |
| Greenwich Mean Tim | GB |
| Gulf Standard Time | Asia/Dubai |
| Guyana Time | America/Guyana |
| HADT | US/Aleutian |
| HAST | US/Aleutian |
| HKT | Hongkong |
| HOVT | Asia/Hovd |
| Hawaii Standard Time | HST |
| Hawaii-Aleutian Daylight Time | US/Aleutian |
| Hawaii-Aleutian Standard Time | US/Aleutian |
| Hong Kong Time | Hongkong |
| Hovd Time | Asia/Hovd |
| ICT | Asia/Ho_Chi_Minh |
| IDT | Israel |
| IOT | Indian/Chagos |
| IRDT | Iran |
| IRKT | Asia/Chita |
| IRST | Iran |
| India Standard Time | Asia/Kolkata |
| Indian Ocean Territory Time | Indian/Chagos |
| Indochina Time | Asia/Ho_Chi_Minh |
| Iran Daylight Time | Iran |
| Iran Standard Time | Iran |

| | |
|--------------------------------|----------------------|
| Irish Summer Time | Eire |
| Irkutsk Time | Asia/Chita |
| Israel Daylight Time | Israel |
| Israel Standard Time | Israel |
| Japan Standard Time | Asia/Tokyo |
| KGT | Asia/Bishkek |
| KOST | Pacific/Kosrae |
| KRAT | Asia/Krasnoyarsk |
| KST | ROK |
| Khandyga Time | Asia/Khandyga |
| Kirgizstan Time | Asia/Bishkek |
| Korea Standard Time | ROK |
| Kosrae Time | Pacific/Kosrae |
| Krasnoyarsk Time | Asia/Krasnoyarsk |
| LHDT | Australia/LHI |
| LHST | Australia/LHI |
| LINT | Pacific/Kiritimati |
| Line Is. Time | Pacific/Kiritimati |
| Lord Howe Daylight Time | Australia/LHI |
| Lord Howe Standard Time | Australia/LHI |
| MAGT | Asia/Magadan |
| MART | Pacific/Marquesas |
| MAWT | Antarctica/Mawson |
| MDT | Navajo |
| MEST | MET |
| MHT | Kwajalein |
| MIST | Antarctica/Macquarie |
| MMT | Asia/Rangoon |
| MSK | W-SU |
| MUT | Indian/Mauritius |
| MVT | Indian/Maldives |
| MYT | Asia/Kuching |
| Macquarie Island Standard Time | Antarctica/Macquarie |
| Magadan Time | Asia/Magadan |
| Malaysia Time | Asia/Kuching |
| Maldives Time | Indian/Maldives |

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|----------------------------|-------------------|
| Marquesas Time | Pacific/Marquesas |
| Marshall Islands Time | Kwajalein |
| Mauritius Time | Indian/Mauritius |
| Mawson Time | Antarctica/Mawson |
| Middle Europe Summer Time | MET |
| Middle Europe Time | MET |
| Mideast/Riyadh87 | - |
| Mideast/Riyadh88 | - |
| Mideast/Riyadh89 | - |
| Moscow Standard Time | W-SU |
| Mountain Daylight Time | Navajo |
| Mountain Standard Time | MST |
| Myanmar Time | Asia/Rangoon |
| NCT | Pacific/Noumea |
| NDT | America/St_Johns |
| NFT | Pacific/Norfolk |
| NOVT | Asia/Novosibirsk |
| NPT | Asia/Katmandu |
| NRT | Pacific/Nauru |
| NUT | Pacific/Niue |
| NZDT | NZ |
| NZST | NZ |
| Nauru Time | Pacific/Nauru |
| Nepal Time | Asia/Katmandu |
| New Caledonia Time | Pacific/Noumea |
| New Zealand Daylight Time | NZ |
| New Zealand Standard Time | NZ |
| Newfoundland Daylight Time | America/St_Johns |
| Newfoundland Standard Time | America/St_Johns |
| Niue Time | Pacific/Niue |
| Norfolk Time | Pacific/Norfolk |
| Novosibirsk Time | Asia/Novosibirsk |
| OMST | Asia/Omsk |
| ORAT | Asia/Oral |
| Omsk Time | Asia/Omsk |
| Oral Time | Asia/Oral |

| | |
|---------------------------------|----------------------|
| PDT | America/Los_Angeles |
| PET | America/Lima |
| PETT | Asia/Kamchatka |
| PGT | Pacific/Port_Moresby |
| PHOT | Pacific/Enderbury |
| PHT | Asia/Manila |
| PKT | Asia/Karachi |
| PMDT | America/Miquelon |
| PMST | America/Miquelon |
| PONT | Pacific/Ponape |
| PWT | Pacific/Palau |
| PYST | America/Asuncion |
| PYT | America/Asuncion |
| Pacific Daylight Time | America/Los_Angeles |
| Pacific Standard Time | America/Los_Angeles |
| Pakistan Time | Asia/Karachi |
| Palau Time | Pacific/Palau |
| Papua New Guinea Time | Pacific/Port_Moresby |
| Paraguay Summer Time | America/Asuncion |
| Paraguay Time | America/Asuncion |
| Peru Time | America/Lima |
| Petropavlovsk-Kamchatski Time | Asia/Kamchatka |
| Philippines Time | Asia/Manila |
| Phoenix Is. Time | Pacific/Enderbury |
| Pierre & Miquelon Daylight Time | America/Miquelon |
| Pierre & Miquelon Standard Time | America/Miquelon |
| Pitcairn Standard Time | Pacific/Pitcairn |
| Pohnpei Time | Pacific/Ponape |
| QYZT | Asia/Qyzylorda |
| Qyzylorda Time | Asia/Qyzylorda |
| RET | Indian/Reunion |
| ROTT | Antarctica/Rothera |
| Reunion Time | Indian/Reunion |
| Rothera Time | Antarctica/Rothera |
| SAKT | Asia/Sakhalin |
| SAMT | Europe/Samara |

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|-----------------------------|------------------------|
| SAST | Africa/Maseru |
| SBT | Pacific/Guadalcanal |
| SCT | Indian/Mahe |
| SGT | Singapore |
| SRET | Asia/Srednekolymusk |
| SRT | America/Paramaribo |
| SYOT | Antarctica/Syowa |
| Sakhalin Time | Asia/Sakhalin |
| Samara Time | Europe/Samara |
| Samoa Standard Time | US/Samoa |
| Seychelles Time | Indian/Mahe |
| Singapore Time | Singapore |
| Solomon Is. Time | Pacific/Guadalcanal |
| South Africa Standard Time | Africa/Maseru |
| South Georgia Standard Time | Atlantic/South_Georgia |
| Srednekolymusk Time | Asia/Srednekolymusk |
| Suriname Time | America/Paramaribo |
| Syowa Time | Antarctica/Syowa |
| SystemV/AST4 | America/Puerto_Rico |
| SystemV/AST4ADT | Canada/Atlantic |
| SystemV/CST6 | Canada/Saskatchewan |
| SystemV/CST6CDT | US/Central |
| SystemV/EST5 | America/Cayman |
| SystemV/EST5EDT | America/New_York |
| SystemV/HST10 | US/Hawaii |
| SystemV/MST7 | US/Arizona |
| SystemV/MST7MDT | America/Denver |
| SystemV/PST8 | Pacific/Pitcairn |
| SystemV/PST8PDT | US/Pacific |
| SystemV/YST9 | Pacific/Gambier |
| SystemV/YST9YDT | US/Alaska |
| TAHT | Pacific/Tahiti |
| TFT | Indian/Kerguelen |
| TJT | Asia/Dushanbe |
| TKT | Pacific/Fakaofu |
| TLT | Asia/Dili |

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|---------------------|--------------------|
| TMT | Asia/Ashgabat |
| TOT | Pacific/Tongatapu |
| TVT | Pacific/Funafuti |
| Tahiti Time | Pacific/Tahiti |
| Tajikistan Time | Asia/Dushanbe |
| Timor-Leste Time | Asia/Dili |
| Tokelau Time | Pacific/Fakaofu |
| Tonga Time | Pacific/Tongatapu |
| Turkmenistan Time | Asia/Ashgabat |
| Tuvalu Time | Pacific/Funafuti |
| ULAT | Asia/Ulan_Bator |
| UYST | America/Montevideo |
| UYT | America/Montevideo |
| UZT | Asia/Tashkent |
| Ulaanbaatar Time | Asia/Ulan_Bator |
| Uruguay Summer Time | America/Montevideo |
| Uruguay Time | America/Montevideo |
| Ust-Nera Time | Asia/Ust-Nera |
| Uzbekistan Time | Asia/Tashkent |
| VET | America/Caracas |
| VLAT | Asia/Ust-Nera |
| VOST | Antarctica/Vostok |
| VUT | Pacific/Efate |
| Vanuatu Time | Pacific/Efate |
| Venezuela Time | America/Caracas |
| Vladivostok Time | Asia/Vladivostok |
| Vostok Time | Antarctica/Vostok |
| WAKT | Pacific/Wake |
| WAST | Africa/Windhoek |
| WAT | Africa/Lagos |
| WEST | WET |
| WFT | Pacific/Wallis |
| WGST | America/Godthab |
| WGT | America/Godthab |
| WIB | Asia/Jakarta |
| WIT | Asia/Jayapura |

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|-------------------------------|--------------------|
| WITA | Asia/Makassar |
| WSDT | Pacific/Apia |
| WSST | Pacific/Apia |
| Wake Time | Pacific/Wake |
| Wallis & Futuna Time | Pacific/Wallis |
| West Indonesia Time | Asia/Jakarta |
| West Samoa Daylight Time | Pacific/Apia |
| West Samoa Standard Time | Pacific/Apia |
| Western African Summer Time | Africa/Windhoek |
| Western African Time | Africa/Lagos |
| Western European Summer Time | WET |
| Western European Time | WET |
| Western Greenland Summer Time | America/Godthab |
| Western Greenland Time | America/Godthab |
| XJT | Asia/Urumqi |
| Xinjiang Standard Time | Asia/Urumqi |
| YAKT | Asia/Yakutsk |
| YEKT | Asia/Yekaterinburg |
| Yakutsk Time | Asia/Yakutsk |
| Yekaterinburg Time | Asia/Yekaterinburg |

Known Issues and Limitations in CDH 6.0.0

The following sections describe the known issues in CDH 6.0.0, grouped by component:

Operating System Known Issues

Known issues and workarounds related to operating systems are listed below.

Linux kernel security patch and CDH services crashes CVE-2017-1000364

After applying a recent Linux kernel security patch for [CVE-2017-1000364](#), CDH services that use the JSVC set of libraries crash with a Java Virtual Machine (JVM) error such as:

```
A fatal error has been detected by the Java Runtime Environment:
SIGBUS (0x7) at pc=0x00007fe91ef6cebc, pid=30321, tid=0x00007fe930c67700
```

Cloudera services for HDFS and Impala cannot start after applying the patch.



Important: If you have not upgraded your Linux kernel using the distribution's patch for CVE-2017-1000364, do **not** apply the patch.

Commonly used Linux distributions are shown in the table below. However, the issue affects any CDH release that runs on RHEL, CentOS, Oracle Linux, SUSE Linux, or Ubuntu and that has had the Linux kernel security patch for CVE-2017-1000364 applied.

If you have already applied the patch for your OS according to the advisories for CVE-2017-1000364, apply the kernel update that contains the fix for your operating system (some of which are listed in the table). If you cannot apply the kernel update, you can work around the issue by increasing the Java thread stack size as detailed in the steps below.

| Distribution | Advisories for CVE-2017-1000364 | Advisory updates |
|----------------|----------------------------------|---|
| Oracle Linux 6 | ELSA-2017-1486 | Oracle has fixed this problem in ELSA-2017-1723 . |
| Oracle Linux 7 | ELSA-2017-1484 | Oracle has also added the fix for Oracle Linux 7 in ELBA-2017-1674 . |
| RHEL 6 | RHSA-2017-1486 | RedHat has fixed this problem for RHEL 6, marked this as outdated and superseded by RHSA-2017-1723 . |
| RHEL 7 | RHSA-2017-1484 | RedHat has fixed this problem for RHEL 7 and has marked this patch as outdated and superseded by RHBA-2017-1674 . |
| SLES | CVE-2017-1000364 | SUSE has also fixed this problem and the patch names are included in this same advisory. |

Workaround

If you cannot apply the kernel update, you can set the Java thread stack size to `-Xss1280k` for the affected services using the appropriate Java configuration option or the environment advanced configuration snippet, as detailed below.

For role instances that have specific Java configuration options properties:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Type `java` in the search field to display Java related configuration parameters. The **Java Configuration Options for Catalog Server** property field displays. Type `-Xss1280k` in the entry field, adding to any existing settings.
4. Click **Save Changes**.
5. Navigate to the HDFS service by selecting **Clusters > HDFS**.
6. Click the **Configuration** tab.
7. Click the Scope filter **DataNode**. The **Java Configuration Options for DataNode** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
8. Click **Save Changes**.
9. Select the Scope filter **NFS Gateway**. The **Java Configuration Options for NFS Gateway** field displays among the properties listed. Enter `-Xss1280k` into the field, adding to any existing properties.
10. Click **Save Changes**.
11. Restart the affected roles (or configure the safety valves in next section and restart when finished with all configurations).

For role instances that do not have specific Java configuration options:

1. Log in to Cloudera Manager Admin Console.
2. Select **Clusters > Impala**, and then click the **Configuration** tab.
3. Click the Scope filter **Impala Daemon** and Category filter **Advanced**.
4. Type `impala daemon environment` in the search field to find the safety valve entry field.
5. In the **Impala Daemon Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

6. Click **Save Changes**.
7. Click the Scope filter **Impala StateStore** and Category filter **Advanced**.
8. In the **Impala StateStore Environment Advanced Configuration Snippet (Safety Valve)**, enter:

```
JAVA_TOOL_OPTIONS=-Xss1280K
```

9. Click **Save Changes**.

10 Restart the affected roles.

The table below summarizes the parameters that can be set for the affected services:

| Service | Settable Java Configuration Option |
|-----------------------|---|
| HDFS DataNode | Java Configuration Options for DataNode |
| HDFS NFS Gateway | Java Configuration Options for NFS Gateway |
| Impala Catalog Server | Java Configuration Options for Catalog Server |
| Impala Daemon | Impala Daemon Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |
| Impala StateStore | Impala StateStore Environment Advanced Configuration Snippet (Safety Valve) |
| | JAVA_TOOL_OPTIONS=-Xss1280K |

Cloudera Issue: CDH-55771

Leap-Second Events



Note: The [next leap-second event](#) is unknown at this time. The last leap-second event occurred on December 16, 2016 at 23:59:60 UTC.

Impact: After a leap-second event, Java applications (including CDH services) using older Java and Linux kernel versions, may consume almost 100% CPU. See <https://access.redhat.com/articles/15145>.

Leap-second events are tied to the time synchronization methods of the Linux kernel, the Linux distribution and version, and the Java version used by applications running on affected kernels.

Although Java is increasingly agnostic to system clock progression (and less susceptible to a kernel's mishandling of a leap-second event), using JDK 7 or 8 should prevent issues at the CDH level (for CDH components that use the Java Virtual Machine).

Immediate action required:

(1) Ensure that the kernel is up to date.

- **RHEL6/7, CentOS 6/7** - 2.6.32-298 or higher
- **Oracle Enterprise Linux (OEL)** - Kernels built in 2013 or later
- **SLES12** - No action required.

(2) Ensure that your Java JDKs are current (especially if the kernel is not up to date and cannot be upgraded).

- **Java 8** - No action required.

(3) Ensure that your systems use either NTP or PTP synchronization.

For systems not using time synchronization, update both the OS tzdata and Java tzdata packages to the tzdata-2016g version, at a minimum. For OS tzdata package updates, contact OS support or check updated OS repositories. For Java tzdata package updates, see Oracle's [Timezone Updater Tool](#).

Cloudera Issue: CDH-44788, TSB-189

Apache Accumulo Known Issues

Running Apache Accumulo on top of a CDH 6.0.x cluster is not currently supported. If you try to upgrade to CDH 6.0.x you will be asked to remove the Accumulo service from your cluster. Running Accumulo on top of CDH 6 will be supported in a future release.

Affected Versions: CDH 6.0.0

Cloudera Data Science Workbench

Cloudera Data Science Workbench is not supported with CDH 6.0.x. Cloudera Data Science Workbench 1.5.0 (and higher) is supported with CDH 6.1.x (and higher).

Cloudera Issue: DSE-2769

Apache Crunch Known Issues



Warning: As of CDH 6.0.0, Apache Crunch is deprecated, and will be removed in a future release. For more information, see [Deprecated Items](#) on page 1459.

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Apache Flume Known Issues

Fast Replay does not work with encrypted File Channel

If an encrypted file channel is set to use fast replay, the replay will fail and the channel will fail to start.

Workaround: Disable fast replay for the encrypted channel by setting `use-fast-replay` to false.

Apache Issue: [FLUME-1885](#)

Apache Hadoop Known Issues

This page includes known issues and related topics, including:

Deprecated Properties

Several Hadoop and HDFS properties have been deprecated as of Hadoop 3.0 and later. For details, see [Deprecated Properties](#).

Hadoop Common

KMS Load Balancing Provider Fails to invalidate Cache on Key Delete

The KMS Load balancing Provider has not been correctly invalidating the cache on key delete operations. The failure to invalidate the cache on key delete operations can result in the possibility that data can be leaked from the framework for a short period of time based on the value of the `hadoop.kms.current.key.cache.timeout.ms` property. Its default value is 30,000ms. When the KMS is deployed in an HA pattern the `KMSLoadBalancingProvider` class will only send the delete operation to one KMS role instance in a round-robin fashion. The code lacks a call to invalidate the cache across all instances and can leave key information including the metadata and key stored (the deleted key) in the cache on one or more KMS instances up to the key cache timeout.

Apache issue:

- [HADOOP-17208](#)
- [HADOOP-17304](#)

Products affected:

- CDH
- HDP
- CDP

Releases affected:

- CDH 5.x
- CDH 6.x
- CDP 7.0.x

- CDP 7.1.4 and earlier
- HDP 2.6 and later

Users affected: Customers with Data-at-rest encryption enabled that have more than 1 kms role instance and the services Key Cache enabled.

Impact: Key Meta-data and Key material may remain active within the service cache.

Severity: Medium

Action required:

- CDH customers: Upgrade to CDP 7.1.5 or request a patch
- HDP customers: Request a patch

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-434: KMS Load Balancing Provider Fails to invalidate Cache on Key Delete](#)

KMS consumes memory and increases File Descriptors

Due an internal implementation change ([HADOOP-13597](#)), the KMS may consume a greater heap size and users may observe additional open file descriptors. Consequently, the KMS may return warnings ("Too Many File Descriptors") in its log, or may exit as the result of an `OutOfMemoryError`. Due to the extra JVM GC activities, the CDH 6 KMS may experience up to 20% throughput reduction (compared to CDH 5). In a production cluster, a KMS server may consume twice as much heap usage, and retain more than 20,000 open File Descriptors.

Workaround:

- Increase the KMS user maximum open file descriptors to 32,768 or more, and ensure the KMS runs on a dedicated host.
- Increase the KMS heap size to 4GB or more.
- Install additional KMS roles.

Affected Versions: CDH 6.0.0

Fixed Versions: CDH 6.0.1

Apache Issue: [HADOOP-13597](#)

Cloudera Issue: CDH-71528

Hadoop LdapGroupsMapping does not support LDAPS for self-signed LDAP server

Hadoop LdapGroupsMapping does not work with LDAP over SSL (LDAPS) if the LDAP server certificate is self-signed. This use case is currently not supported even if Hadoop User Group Mapping LDAP TLS/SSL Enabled, Hadoop User Group Mapping LDAP TLS/SSL Truststore, and Hadoop User Group Mapping LDAP TLS/SSL Truststore Password are filled properly.

Affected Versions: CDH 5.x and 6.0.x versions

Fixed Versions: CDH 6.1.0

Apache Issue: [HADOOP-12862](#)

Cloudera Issue: CDH-37926

HDFS

Possible HDFS Erasure Coded (EC) Data Files Corruption in EC Reconstruction

Cloudera has detected two bugs that can cause corruption of HDFS Erasure Coded (EC) files during the data reconstruction process.

The first bug can be hit during DataNode decommissioning. Due to a bug in the data reconstruction logic during decommissioning, some parity blocks may be generated with a content of all zeros.

Usually the NameNode makes a simple copy of the block when re-replicating it during decommissioning. However, if a decommissioning DataNode is already assigned with more than the replication streams hard limit (It can be set by

using the `dfs.namenode.replication.max-streams-hard-limit` property. Its default value is 4.), the node will be treated as busy and instead of performing a simple copy, the parity blocks may be reconstructed as all zeros.

Subsequently if any other data blocks in the same EC group are lost (due to node failure or disk failure), the reconstruction may use a bad parity block to generate bad data blocks. So, once parity blocks are corrupted, any further reconstruction in the same block group can propagate further corruptions in the same block group.

The second issue occurs in a corner case when a DataNode times out in the reconstruction process. It will reschedule a read from another good DataNode. However, the stale DataNode reader may have polluted the buffer and subsequent reconstruction which uses the polluted buffer will suffer from EC block corruption.

Products affected:

- CDH
- HDP
- CDP Private Cloud Base

Releases affected: All Cloudera releases based on Apache Hadoop 3.0 and later

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.x
- HDP 3.1.x
- CDP 7.1.x

Users affected: A customer may be affected by this corruption if they are:

- Using an affected version of the product.
- Have enabled EC policy on one or more HDFS directories and have some EC files.
- Decommissioned DataNodes after enabling the EC policy will increase the probability of corruption.
- Rarely EC reconstructions can create dirty buffer issues which will lead to data corruption.

To determine whether you have any EC files on your cluster, run the following `fsck` command:

```
hdfs fsck / -files | grep "erasure-coded: policy="  
/ectest/dirWithPolicy/sample-sales-1.csv 215 bytes, erasure-coded: policy=RS-3-2-1024k,  
1 block(s): OK
```

If there are any file paths listed in the output of the above command, and if you have decommissioned DataNodes after creating those files, your EC files may have been affected by this bug.

If no files were listed by the above command, then your data is not affected. However, if you plan to use EC or if you have enabled EC policy on any directory in the past, then we strongly recommend requesting a hotfix from Cloudera.

Severity: High

Impact: With erasure coded files in the cluster, if you have done the decommission, the data files are potentially corrupted. HDFS/NameNode cannot self-detect and self-recover the corrupted files. This is because checksums are also updated during reconstruction. So, the HDFS client may not detect the corruption while reading the affected blocks, however applications may be impacted. Even in the case of normal reconstruction, the second dirty buffer issue can trigger corruption.

Workaround:

- If EC is enabled, request for a hotfix immediately from Cloudera.
- In case EC was enabled and decommission of DataNodes was performed in the past after enabling EC, Cloudera has implemented tools to check the possibility of corruption. Contact Cloudera support in such a situation.
- If no decommission was done in the past after enabling EC, then it is recommended not to perform decommission of DataNodes until the hotfix is applied.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Possible HDFS Erasure Coded \(EC\) Data Files Corruption in EC Reconstruction](#)

HDFS Snapshot corruption

A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Products affected: HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0 - 6.2.1, 6.3.0, 6.3.1, 6.3.2

Users affected: Any clusters with HDFS Snapshots enabled

Impact: A fix to HDFS snapshot functionality caused a regression in the affected CDH releases. When a snapshot is deleted, internal data structure in the NameNode can become inconsistent and the checkpoint operation on the Standby NameNode can fail.

Standby NameNode detects the inconsistent snapshot data structure and shuts itself down. To recover from this situation, the fsimage must be repaired and put back into both NameNodes' fsimage directory for the Standby NameNode to start normally. The Active NameNode stays up. However no fsimage checkpoint is performed because the Standby NameNode is down.

This problem can also prevent snapshots from being deleted or files within snapshots being listed. The following is an example of a typical error:

```
hdfs dfs -deleteSnapshot /path snapshot_123
deleteSnapshot: java.lang.IllegalStateException
```

The recovery of the corrupt fsimage can result in the loss of snapshots.

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: Alternatively, avoid using snapshots. Cloudera BDR uses snapshots automatically when the relevant directories are snapshottable. Hence, we strongly recommend avoiding the upgrade to the affected releases if you are using BDR. For information and instructions, see [Enabling and Disabling HDFS Snapshots](#).

Addressed in release/refresh/patch: CDH 6.3.3

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-390: HDFS Snapshot corruption](#)

CVE-2018-1296 Permissive Apache Hadoop HDFS listXAttr Authorization Exposes Extended Attribute Key/Value Pairs

AHDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent.

Products affected: Apache HDFS

Releases affected:

- CDH 5.4.0 - 5.15.1, 5.16.0
- CDH 6.0.0, 6.0.1, 6.1.0

Users affected: Users who store sensitive data in extended attributes, such as users of HDFS encryption.

Date/time of detection: December 12, 2017

Detected by: Rushabh Shah, Yahoo! Inc., Hadoop committer

Severity (Low/Medium/High): Medium

Impact: HDFS exposes extended attribute key/value pairs during listXAttrs, verifying only path-level search access to the directory rather than path-level read permission to the referent. This affects features that store sensitive data in extended attributes.

CVE: CVE-2018-1296

Immediate action required:

- Upgrade: Update to a version of CDH containing the fix.
- Workaround: If a file contains sensitive data in extended attributes, users and admins need to change the permission to prevent others from listing the directory that contains the file.

Addressed in release/refresh/patch:

- CDH 5.15.2, 5.16.1
- CDH 6.1.1, 6.2.0

Deadlock occurs when rolleditlog rpc call happens and editPendingQ is full

CDH 6 enables async edit logger by default. A known issue in the async edit logger may cause a deadlock in the NameNode.

Workaround: Disable async edit logger by setting `dfs.namenode.edits.asynclogging` to false in the following property in Cloudera Manager: NameNode Advanced Configuration Snippet (Safety Valve) for `hdfs-site.xml`.

Affected Versions: CDH 6.0.0

Fixed Versions: CDH 6.0.1

Apache Issue: [HDFS-13051](#)

Cloudera Issue: CDH-71921, CDH-64325

User Group Information (UGI) Ticket-Granting Ticket (TGT) renewal fails

When the UGI attempts to renew its TGT, the renewal fails with a `NullPointerException`. This issue can happen to a number of service roles, including YARN resource manager, Impala Daemon and Spark queries.

Workaround: The YARN ResourceManager and ImpalaD require a manual restart. Spark queries retry upon failure, so the issue would only be noticeable after several failures.

Affected Versions: CDH 6.0.0

Fixed Versions: CDH 6.0.1

Apache Issue: [HADOOP-15593](#)

OIV ReverseXML processor fails

The HDFS OIV ReverseXML processor fails if the XML file contains escaped characters.

Affected Versions: CDH 6.x

Apache Issue: [HDFS-12828](#)

UnrecoverableKeyException occurs

An `UnrecoverableKeyException` error occurs due to the new Enhanced KeyStore Mechanisms feature in Oracle JDK 8u171 or later. For more information, see the Oracle JDK release notes for version 8u171.

Affected Versions: CDH 6.0.0

Fixed Versions: CDH 6.0.1

Apache Issue: [HADOOP-15473](#)

Cannot move encrypted files to trash

With HDFS encryption enabled, you cannot move encrypted files or directories to the trash directory.

Workaround: To remove encrypted files/directories, use the following command with the `-skipTrash` flag specified to bypass trash.

```
rm -r -skipTrash /testdir
```

Affected Versions: All CDH versions

Apache Issue: [HADOOP-10902](#)

HDFS NFS gateway and CDH installation (using packages) limitation

HDFS NFS gateway works as shipped ("out of the box") only on RHEL-compatible systems, but not on SLES or Ubuntu. Because of a bug in native versions of `portmap/rpcbind`, the HDFS NFS gateway does not work out of the box on SLES or Ubuntu systems when CDH has been installed from the command-line, using packages. It does work on supported versions of RHEL-compatible systems on which `rpcbind-0.2.0-10.el6` or later is installed, and it does work if you use Cloudera Manager to install CDH, or if you start the gateway as root.

Workarounds and caveats:

- On Red Hat and similar systems, make sure `rpcbind-0.2.0-10.el6` or later is installed.
- On SLES and Ubuntu systems, do one of the following:
 - Install CDH using Cloudera Manager; *or*
 - Start the NFS gateway as root; *or*
 - [Start the NFS gateway without using packages](#); *or*
 - You can use the gateway by running `rpcbind` in insecure mode, using the `-i` option, but keep in mind that this allows anyone from a remote host to bind to the `portmap`.

Upstream Issue: [731542](#) (Red Hat), [823364](#) (SLES)

No error when changing permission to 777 on `.snapshot` directory

Snapshots are read-only; running `chmod 777` on the `.snapshots` directory does not change this, but does not produce an error (though other illegal operations do).

Affected Versions: All CDH versions

Apache Issue: [HDFS-4981](#)

Snapshot operations are not supported by ViewFileSystem

Affected Versions: All CDH versions

Snapshots do not retain directories' quotas settings

Affected Versions: All CDH versions

Apache Issue: [HDFS-4897](#)

Permissions for `dfs.namenode.name.dir` incorrectly set

Hadoop daemons should set permissions for the `dfs.namenode.name.dir` (or `dfs.name.dir`) directories to `drwx-----` (700), but in fact these permissions are set to the file-system default, usually `drwxr-xr-x` (755).

Workaround: Use `chmod` to set permissions to 700.

Affected Versions: All CDH versions

Apache Issue: [HDFS-2470](#)

`hadoop fsck -move` does not work in a cluster with host-based Kerberos

Workaround: Use `hadoop fsck -delete`

Affected Versions: All CDH versions

Apache Issue: None

Block report can exceed maximum RPC buffer size on some DataNodes

On a DataNode with a large number of blocks, the block report may exceed the maximum RPC buffer size.

Workaround: Increase the value `ipc.maximum.data.length` in `hdfs-site.xml`:

```
<property>
  <name>ipc.maximum.data.length</name>
  <value>268435456</value>
</property>
```

Affected Versions: All CDH versions

Apache Issue: None

MapReduce2 and YARN

YARN Resource Managers will stay in standby state after failover or startup

On startup or failover the YARN Resource Manager will stay in the standby state due to a failure to load the recovery data. The failure is logged as a Null Pointer exception in the YARN Resource Manager log:

```
ERROR org.apache.hadoop.yarn.server.resourcemanager.ResourceManager: Failed to
load/recover state
java.lang.NullPointerException at
org.apache.hadoop.yarn.server.resourcemanager.scheduler.fair.FairScheduler.addApplicationAttempt
```

This issue is fixed as [YARN-7913](#).

Products affected: CDH with Fair Scheduler

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0, CDH 6.2.1
- CDH 6.3.0, CDH 6.3.1, CDH 6.3.2, CDH 6.3.3

User affected:

Any cluster running the Hadoop YARN service with the following configuration:

- Scheduler set to Fair Scheduler
- The YARN Resource Manager Work Preserving Recovery feature is enabled. That includes High Available setups.

Impact:

On startup or failover the YARN Resource Manager will process the state store to recover the workload that is currently running in the cluster. The recovery fails with a “null pointer exception” being logged.

Due to the recovery failure the YARN Resource Manager will not become active. In a cluster with High Availability configured the standby YARN Resource Manager will fail with the same exception leaving both YARN Resource Managers in a standby state. Even if the YARN Resource Managers are restarted, they still stay in standby state.

Immediate action required:

- Customers requiring an urgent fix who are using CDH 6.2.x or earlier: Raise a support case to request a new patch.
- Customers on CDH 6.3.x: Upgrade to the latest maintenance release.

Addressed in release/refresh/patch:

- CDH 6.3.4

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-408: YARN Resource Managers will stay in standby state after failover or startup snapshot](#)

The Standby Resource Manager redirects `/jmx` and `/metrics` requests to the Active Resource Manager.

When ResourceManager high availability is enabled the Standby Resource Manager redirects `/jmx` and `/metrics` requests to the Active Resource Manager. This causes the following issues in Cloudera Manager:

- If **Enable Kerberos Authentication for HTTP Web-Console** is disabled: Cloudera Manager shows statistics for the wrong server.
- If **Enable Kerberos Authentication for HTTP Web-Console** is enabled: connection from the agent to the standby fails with the `HTTPError: HTTP Error 401: Authentication required` error message. As a result, the health of the Standby Resource Manager will become bad.

Workaround: N/A

Affected Versions: CDH 6.0.x, CDH 6.1.0

Fixed Version: CDH 6.1.1

Cloudera Issue: CDH-76040

YARN's Continuous Scheduling can cause slowness in Oozie

When Continuous Scheduling is enabled in Yarn, this can cause slowness in Oozie due to long delays in communicating with Yarn. In Cloudera Manager 5.9.0 and higher, `Enable Fair Scheduler Continuous Scheduler` is turned off by default.

Workaround: Turn off `Enable Fair Scheduler Continuous Scheduling` in Cloudera Manager YARN Configuration. To keep equivalent benefits of this feature, turn on `Fair Scheduler Assign Multiple Tasks`.

Affected Versions: All CDH versions

Cloudera Issue: CDH-60788

JobHistory URL mismatch after server relocation

After moving the JobHistory Server to a new host, the URLs listed for the JobHistory Server on the ResourceManager web UI still point to the old JobHistory Server. This affects existing jobs only. New jobs started after the move are not affected.

Workaround: For any existing jobs that have the incorrect JobHistory Server URL, there is no option other than to allow the jobs to roll off the history over time. For new jobs, make sure that all clients have the updated `mapred-site.xml` that references the correct JobHistory Server.

Affected Versions: All CDH versions

Apache Issue: None

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

NodeManager fails because of the changed default location of container executor binary

The default location of container-executor binary and `.cfg` files was changed to `/var/lib/yarn-ce`. It used to be `/opt/cloudera/parcels/<CDH_parcel_version>`. Because of this change, if you did not have the mount options `-noexec` and `-nosuid` set on `/opt`, the NodeManager can fail to start up as these options are set on `/var`.

Affected versions CDH 5.16.1, All CDH 6 versions

Workaround: Either remove the `-noexec` and `-nosuid` mount options on `/var` or change the container-executor binary and `.cdf` path using the `CMF_YARN_SAFE_CONTAINER_EXECUTOR_DIR` environment variable.

Routable IP address required by ResourceManager

ResourceManager requires routable `host:port` addresses for `yarn.resourcemanager.scheduler.address`, and does not support using the wildcard `0.0.0.0` address.

Workaround: Set the address, in the form `host:port`, either in the client-side configuration, or on the command line when you submit the job.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-6808

Amazon S3 copy may time out

The Amazon S3 filesystem does not support renaming files, and performs a copy operation instead. If the file to be moved is very large, the operation can time out because S3 does not report progress during the operation.

Workaround: Use `-Dmapred.task.timeout=15000000` to increase the MR task timeout.

Affected Versions: All CDH versions

Apache Issue: [MAPREDUCE-972](#)

Cloudera Issue: CDH-17955

Apache HBase Known Issues

Cloudera Navigator plugin impacts HBase performance

Navigator Audit logging for HBase access can have a big impact on HBase performance most noticeable during data ingestion.

Component affected: HBase

Products affected: CDH

Releases affected: CDH 6.x

Impact: 4x performance increase was observed in batchMutate calls after disabling Navigator Audit.

Severity: High

Workaround:

1. In Cloudera Manager, navigate to **HBase > Configuration**.
2. Find the **Enable Audit Collection** property and clear it.
3. Restart the **HBase** service.

Upgrade: Upgrade to CDP where Navigator is no longer used.

HBASE-25206: snapshot and cloned table corruption when original table is deleted

HBASE-25206 can cause data loss either through corrupting an existing hbase snapshot or destroying data that backs a clone of a previous snapshot.

Component affected: HBase

Products affected:

- HDP
- CDH
- CDP

Releases affected:

- CDH 6.x.x

- HDP 3.1.5
- CDP PVC Base 7.1.x
- Cloudera Runtime (Public Cloud) 7.0.x
- Cloudera Runtime (Public Cloud) 7.1.x
- Cloudera Runtime (Public Cloud) 7.2.0
- Cloudera Runtime (Public Cloud) 7.2.1
- Cloudera Runtime (Public Cloud) 7.2.2

Users affected: Users of the affected releases.

Impact: Potential risk of Data Loss.

Severity: High

Workaround:

- Make HBase do the clean up work for the splits:
 - Before dropping a table that has any snapshots, first ensure that any regions that resulted from a split have fully rewritten their data and cleanup has happened for the original host region.
 - If there are any remaining children of a split that have links to their parent still, then we first need to issue a major compaction for those regions (or the entire table).
 - After doing the major compaction we need to ensure it has finished before proceeding. There should no longer be any split pointers (named like "<target hfile>.<target region>").
 - Whether or not we needed to do a major compaction we must always tell the catalog janitor to run to ensure the hfiles from any parent regions are moved to the archive.
 - We must wait for the catalog janitor to finish.
 - At this point it is safe to delete the original table without data loss.
- Manually do the archiving:
 - Alternatively, as a part of deleting a table we can manually move all of its files into the archive. First disable the table. Next make sure each region and family combination that is present in the active data area is present in the archive. Finally move all hfiles and links from the active area to the archive.
 - At this point it is safe to drop the table.

Upgrade: Upgrade to a CDP version containing the fix.

- **Addressed in release/refresh/patch:** Cloudera Runtime 7.2.6.0

Apache issue: [HBASE-25206](#)

KB article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-453: HBASE-25206 "snapshot and cloned table corruption when original table is deleted"](#)

HBase Performance Issue

The HDFS short-circuit setting `dfs.client.read.shortcircuit` is overwritten to disabled by `hbase-default.xml`. HDFS short-circuit reads bypass access to data in HDFS by using a domain socket (file) instead of a network socket. This alleviates the overhead of TCP to read data from HDFS which can have a meaningful improvement on HBase performance (as high as 30-40%).

Users can restore short-circuit reads by explicitly setting `dfs.client.read.shortcircuit` in HBase configuration via the configuration management tool for their product (e.g. Cloudera Manager or Ambari).

Products affected:

- CDP
- CDH
- HDP

Releases affected:

- CDP 7.x
- CDH 6.x
- HDP 3.x

Impact: HBase reads with high data-locality will not execute as fast as previously. HBase random read performance is heavily affected as random reads are expected to have low latency (e.g. Get, Multi-Get). Scan workloads would also be affected, but may be less impacted as latency of scans is greater.

Severity: High

Action required: The following workaround can be taken to enable short-circuit read.

- **Cloudera Manager:**

HBase → Configurations → HBase (Service-wide) → HBase Service Advanced Configuration Snippet (Safety Valve) for hbase-site.xml →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

- **Ambari:**

HBase → CONFIGS → Advanced → Custom hbase-site →

```
dfs.client.read.shortcircuit=true
```

```
dfs.domain.socket.path=< Add same value which is configured in hdfs-site.xml >
```

After making these configuration changes, restart the HBase service.

Cloudera will continue to pursue product changes which may alleviate the need to make these configuration changes.

For CDP 7.1.1.0 and newer, the metric `shortCircuitBytesRead` can be viewed for each RegionServer under the RegionServer/Server JMX metrics endpoint. When short circuit reads are not enabled, this metric will be zero. When short circuit reads are enabled and the data locality for this RegionServer is greater than zero, the metric should be greater than zero.

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2021-463: HBase Performance Issue](#)

Default limits for `PressureAwareCompactionThroughputController` are too low

HDP and CDH releases suffer from low compaction throughput limits, which cause storefiles to back up faster than compactions can re-write them. This was originally identified upstream in HBASE-21000.

Products affected:

- HDP
- CDH

Releases affected:

- HDP 3.0.0 through HDP 3.1.2
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.x
- CDH 6.3.0, 6.3.1, 6.3.2, 6.3.3

Users affected: Users of above mentioned HDP and CDH versions.

Severity: Medium

Impact: For non-read-only workloads, this will eventually cause back-pressure onto new writes when the blocking store files limit is reached.

Action required:

- **Upgrade:** Upgrade to the latest release version: CDP 7.1.4, HDP 3.1.5, CDH 6.3.4
- **Workaround:**
 - Set the `hbase.hstore.compaction.throughput.higher.bound` property to 104857600 and the `hbase.hstore.compaction.throughput.lower.bound` property to 52428800 in `hbase-site.xml`.
 - An alternative solution is to set the `hbase.regionserver.throughput.controller` property to `org.apache.hadoop.hbase.regionserver.throttle.NoLimitThroughputController` which will remove all compaction throughput limitations (which has been observed to cause other pressure).

Apache issue: [HBASE-21000](#)

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [Cloudera Customer Advisory: Default limits for PressureAwareCompactionThroughputController are too low](#)

Data loss with restore snapshot

The restore snapshot command causes data loss when the target table was split or truncated after snapshot creation.

Products affected: HBase

Releases affected:

- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0
- CDH 6.3.0

User affected: Users relying on Restore Snapshot functionality.

Impact: Restored table could have missing data when split or truncate happened after snapshot creation.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not use Restore Snapshot. The same functionality can be achieved if the table is deleted and Clone Snapshot is used instead of restoring a table's state to the snapshot.

```
hbase> disable 'table'
hbase> drop 'table'
hbase> clone_snapshot 'snapshot_name', 'table'
hbase> enable 'table'
```

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-379: Data loss with restore snapshot](#)

CDH users must not use Apache HBase's OfflineMetaRepair tool

OfflineMetaRepair helps you to rebuild the HBase meta table from the underlying file system. This tool is often used to correct meta table corruption or loss. It is designed to work only with `hbase-1.x` (CDH 5.x). Users must not run the OfflineMetaRepair tool against CDH 6.x since it uses `hbase-2.x`. If a user runs OfflineMetaRepair tool in CDH 6.x, then it will break or corrupt the HBase meta table.

If you have already corrupted your meta table or you believe your meta table requires the use of something like the former OfflineMetaRepair tool, do not attempt any further changes, contact Cloudera Support.

Products affected: CDH

Releases affected:

- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0
- CDH 6.3.0

User affected: Clusters with HBase installed.

Impact: Cluster becomes inoperable.

Immediate action required: Update to a version of CDH containing the fix.

Workaround: Do not run OfflineMetaRepair tool.

Addressed in release/refresh/patch:

- CDH 6.2.1
- CDH 6.3.2

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-376: CDH users must not use Apache HBase's OfflineMetaRepair tool](#)

HBase suffers data loss during system recovery when a custom WAL directory is configured

[HBASE-20723](#) covers a critical data loss bug. It is present when an HBase deployment is configured to use a non-default location for storing its write-ahead-log. If `hbase.wal.dir` is set to a different location than `hbase.rootdir`, then the recovery process will mistakenly believe there are no edits to replay in the event of process failure of a region server.

Products affected: HBase

Releases affected:

- CDH 5.11.x-5.14.x
- CDH 5.15.0, 5.15.1
- CDH 6.0.0

User affected: Anyone setting the configuration value `hbase.wal.dir` to a setting other than the default. For Cloudera Manager users, this would require setting a safety valve for the `hbase-site.xml` file.

User with non-default setting can determine if they are affected by looking for INFO log messages that indicates edits have been skipped. The following is an example of such message:

```
2018-06-12 22:08:40,455 INFO [RS_LOG_REPLAY_OPS-wn2-duohba:16020-0-Writer-1]
wal.WALSplitter: This region's directory doesn't exist:
hdfs://mycluster/walontest/data/default/tb1/b7fd7db5694eb71190955292b3ff7648. It is very
likely that it was already split so it's safe to discard those edits.
```

Note that the above message is normally harmless, but in this specific edge case the recovery code is looking at the incorrect location to determine region status.

Severity (Low/Medium/High): High

Impact: Data loss is unrecoverable once write-ahead-logs have been deleted as part of routine system processes. There is one exception, if the cluster uses data center replication to ship edits to another cluster and that cluster had not experienced similar data loss.

Immediate action required: Upgrade to a CDH version with the fix.

Addressed in release/refresh/patch: CDH 5.15.2 and higher, CDH 5.16.1 and higher; CDH 6.0.1 and higher

Knowledge article: For the latest update on this issue see the corresponding Knowledge article - [TSB 2019-320: HBase suffers data loss during system recovery when a custom WAL directory is configured](#)

Multiple HBase Services on the Same CDH Cluster is not Supported

Cloudera Manager does not allow to deploy multiple HBase services on the same host of an HDFS cluster as by design a DataNode can only have a single HBase service per host. It is possible to have two HBase services on the same HDFS cluster but they have to be on different DataNodes, meaning that there will be one RegionServer per DataNode per HBase cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cluster. However, that requires additional configuration, for example you have to pin `/hbase_enc` and `/hbase` to avoid the HDFS balancer to cause issues with data locality.

If Cloudera Manager is not used, you can manage multiple configurations per host for different RegionServers that are part of different HBase clusters but that can lead to multiple issues and difficult troubleshooting procedures. Thus, Cloudera does not support managing multiple HBase services on the same CDH cluster.

Region Server occasionally fails when HDFS data transport encryption is enabled

In rare cases, an HBase RegionServer on a Hadoop Data Transfer Encryption enabled cluster (`dfs.encrypt.data.transfer = true`) may crash because it is not able to update the encryption key.

Workaround: Restart the RegionServer.

Affected Versions: CDH 6.0.0

Fixed Versions: 6.0.1

Apache Issue: [HBASE-21018](#)

Cloudera Issue: CDH-71613

Prefetch sometimes doesn't work with encrypted file system

If HBase prefetch is enabled (`hbase.rs.prefetchblocksonopen = true`) on an encrypted HDFS cluster, HBase RegionServer may crash due to memory corruption.

Workaround: Disable HBase prefetch (`hbase.rs.prefetchblocksonopen = false`).

Affected Versions: CDH 6.0.0

Fixed Versions: 6.0.1

Apache Issue: [HBASE-20403](#)

Cloudera Issue: CDH-68666

Hosting regions on Master is not supported

[HBASE-18511](#) added a feature that allows you to host regions on Master. However, this feature is unreliable and the performance gains are not well established, and because of this it is not supported in CDH.

Apache Issue: [HBASE-18511](#)

Cloudera Issue: CDH-53864

IOException from Timeouts

CDH 5.12.0 includes the fix [HBASE-16604](#), where the internal scanner that retries in case of IOException from timeouts could potentially miss data. Java clients were properly updated to account for the new behavior, but thrift clients will now see exceptions where the previous missing data would be.

Workaround: Create a new scanner and retry the operation when encountering this issue.

IntegrationTestReplication fails if replication does not finish before the verify phase begins

During `IntegrationTestReplication`, if the `verify` phase starts before the `replication` phase finishes, the test will fail because the target cluster does not contain all of the data. If the HBase services in the target cluster does not have enough memory, long garbage-collection pauses might occur.

Workaround: Use the `-t` flag to set the timeout value before starting verification.

Cloudera Issue: None.

HDFS encryption with HBase

Cloudera has tested the performance impact of using HDFS encryption with HBase. The overall overhead of HDFS encryption on HBase performance is in the range of 3 to 4% for both read and update workloads. Scan performance has not been thoroughly tested.

`ExportSnapshot` or `DistCp` operations may fail on the Amazon `s3a://` protocol

`ExportSnapshot` or `DistCP` operations may fail on AWS when using certain JDK 8 versions, due to an incompatibility between the AWS Java SDK 1.9.x and the `joda-time` date-parsing module.

Workaround: Use `joda-time` 2.8.1 or higher, which is included in AWS Java SDK 1.10.1 or higher.

Cloudera Issue: None.

An operating-system level tuning issue in RHEL7 causes significant latency regressions

There are two distinct causes for the regressions, depending on the workload:

- For a cached workload, the regression may be up to 11%, as compared to RHEL6. The cause relates to differences in the CPU's C-state (power saving state) behavior. With the same workload, the CPU is around 40% busier in RHEL7, and the CPU spends more time transitioning between C-states in RHEL7. Transitions out of deeper C-states add latency. When CPUs are configured to never enter a C-state lower than 1, RHEL7 is slightly faster than RHEL6 on the cached workload. The root cause is still under investigation and may be hardware-dependent.
- For an IO-bound workload, the regression may be up to 8%, even with common C-state settings. A 6% difference in average disk service time has been observed, which in turn seems to be caused by a 10% higher average read size at the drive on RHEL7. The read sizes issued by HBase are the same in both cases, so the root cause seems to be a change in the EXT4 filesystem or the Linux block IO later. The root cause is still under investigation.

Bug: None

Severity: Medium

Workaround: Avoid using RHEL 7 if you have a latency-critical workload. For a cached workload, consider tuning the C-state (power-saving) behavior of your CPUs.

Export to Azure Blob Storage (the `wasb://` or `wasbs://` protocol) is not supported

CDH 5.3 and higher supports Azure Blob Storage for some applications. However, a null pointer exception occurs when you specify a `wasb://` or `wasbs://` location in the `--copy-to` option of the `ExportSnapshot` command or as the output directory (the second positional argument) of the `Export` command.

Workaround: None.

Apache Issue: [HADOOP-12717](#)

AccessController postOperation problems in asynchronous operations

When security and Access Control are enabled, the following problems occur:

- If a `Delete Table` fails for a reason other than missing permissions, the access rights are removed but the table may still exist and may be used again.
- If `hbaseAdmin.modifyTable()` is used to delete column families, the rights are not removed from the Access Control List (ACL) table. The `postOperation` is implemented only for `postDeleteColumn()`.
- If `Create Table` fails, full rights for that table persist for the user who attempted to create it. If another user later succeeds in creating the table, the user who made the failed attempt still has the full rights.

Workaround: None

Apache Issue: [HBASE-6992](#)

Apache Hive / HCatalog / Hive on Spark Known Issues

This topic also contains:

- [HCatalog Known Issues](#)

- [Hive on Spark Known Issues](#)

Query with an empty WHERE clause problematic if vectorization is off

Specific WHERE clauses cause problems if vectorization is off. For example,

```
SELECT COUNT (DISTINCT cint) FROM alltypesorc WHERE cstring1;
SELECT 1 WHERE 1;
```

If vectorization is turned on and no rules turn off the vectorization, queries run as expected.

Workaround: Rewrite queries with casts or equals.

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-15408](#)

Cloudera Issue: CDH-81649

Query with DISTINCT can fail if vectorization is on

A query can fail when vectorization is turned on, the query contains DISTINCT, and other rules do not turn off the vectorization. A query-specific error message appears, for example:

```
Error: Error while compiling statement: FAILED: SemanticException
org.apache.hadoop.hive.ql.metadata.HiveException: The column KEY._col2:0._col0 is not
in the vectorization context column map {KEY._col0=0, KEY._col1=1, KEY._col2=2}.
(state=42000,code=40000)
```

Workaround: Turn off vectorization for such queries as follows:

```
set hive.vectorized.execution.enabled=false;
```

Affected Versions: 6.3.x, 6.2.x, 6.1.x, 6.0.x

Apache Issue: [HIVE-19032](#)

Cloudera Issue: CDH-81341

Hive Jobs Are Submitted to a Single Queue When Sentry is Deployed

Hive jobs are not submitted into the correct YARN queue when Hive is using Sentry because Hive does not use the YARN API to resolve the user or group of the job's original submitter. This causes the job to be placed in a queue using the placement rules based on the Hive user. The HiveServer2 fair scheduler queue mapping used for "non-impersonation" mode does not handle the primary-secondary queue mappings correctly.

Workaround: If you are a Hive and Sentry user, do not upgrade to CDH 6.0.0. This issue will be fixed as soon as possible. If you must use Hive and Sentry in CDH 6.0.0, see [YARN Dynamic Resource Pools Do Not Work with Hive When Sentry Is Enabled](#) for additional workarounds.

Affected Version: CDH 6.0.0

Fixed Versions: CDH 6.0.1, CDH 6.1.0 and later

Cloudera Issue: CDH-51596

When vectorization is enabled on any file type (ORC, Parquet) queries that divide by zero using the modulo operator (%) return an error

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query divides by zero using the modulo operator (%), it returns the following error: Arithmetic exception [divide by] 0. For example, if you run the following query this issue is triggered: `SELECT 100 % column_c1 FROM table_t1;` and the value in `column_c1` is zero. The divide operator (/) is not affected by this issue.

Workaround: Disable vectorization for the query that is triggering this at either the session level by using the `SET` statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE-19564](#)

Cloudera Issue: CDH-71211

When vectorization is enabled for Hive on any file type (ORC, Parquet) queries that perform comparisons in the SELECT clause on large values in columns with the data type of BIGINT might return wrong results

When vectorization is enabled for Hive on any file type, including ORC and Parquet, if the query performs a comparison operation between very large values in columns that are BIGINT data types in the SELECT clause of the query, incorrect results might be returned. Comparison operators include ==, !=, <, <=, >, and >=. This issue does not occur when the comparison operation is performed in the filtering clause of the query. This issue can also occur when the difference of values in such columns is out of range for a LONG (64-bit) data type. For example, if `column_c1` stores 8976171455044006767 and `column_c2` stores -7272907770454997143, a query such as `SELECT column_c1 < column_c2 FROM table_test` returns `true` instead of `false` because the difference (8976171455044006767 - (-7272907770454997143)) is 1.6249079225499E19 which is greater than 9.22337203685478E18, which is the maximum possible value that a LONG (64-bit) data type can hold.

Workaround: Use a DECIMAL type instead of BIGINT for columns that might contain very large values. Another option is to disable vectorization for the query that is triggering this at either the session level by using the SET statement or at the server level by disabling the property with Cloudera Manager. For information about how to enable or disable query vectorization, see [Enabling Hive Query Vectorization](#).

Affected Versions: When query vectorization is enabled for Hive, this issue affects Hive ORC tables in all versions of CDH and affects Hive Parquet tables in CDH 6.0 and later

Apache Issue: [HIVE_20207](#)

Cloudera Issue: CDH-70996

Specified column position in the ORDER BY clause is not supported for SELECT * queries

When column positions are specified in ORDER BY clauses, they are not honored for SELECT * queries and an error is returned as shown in the following example:

```
CREATE TABLE decimal_1 (id decimal(5,0));
SELECT * FROM decimal_1 ORDER BY 1 limit 100;
Error while compiling statement: FAILED: SemanticException [Error 10219]: Position in
ORDER BY is not supported when using SELECT *
```

Instead the query must list out the columns it is selecting.

Affected Versions: CDH 6.0.0 and higher

Cloudera Issue: CDH-68550

DirectSQL with PostgreSQL

Hive doesn't support Hive direct SQL queries with PostgreSQL database. It only supports this feature with MySQL, MariaDB, and Oracle. With PostgreSQL, direct SQL is disabled as a precaution, since there have been issues reported upstream where it is not possible to fallback on DataNucleus in the event of some failures, plus other non-standard behaviors. For more information, see [Hive Configuration Properties](#).

Affected Versions: All CDH versions

Cloudera Issue: CDH-49017

ALTER PARTITION ... SET LOCATION does not work on Amazon S3 or between S3 and HDFS

Cloudera recommends that you do not use ALTER PARTITION ... SET LOCATION on S3 or between S3 and HDFS. The rest of the ALTER PARTITION commands work as expected.

Affected Versions: All CDH versions

Cloudera Issue: CDH-42420

Commands run against an Oracle-backed metastore might fail

Commands run against an Oracle-backed Metastore fail with error:

```
javax.jdo.JDODataStoreException Incompatible data type for column TBLS.VIEW_EXPANDED_TEXT
: was CLOB (datastore),
but type expected was LONGVARCHAR (metadata). Please check that the type in the datastore
and the type specified in the MetaData are consistent.
```

This error might occur if the metastore is run on top of an Oracle database with the configuration property `datanucleus.validateColumns` set to `true`.

Workaround: Set `datanucleus.validateColumns=false` in the `hive-site.xml` configuration file.

Affected Versions: All CDH versions

Cannot create archive partitions with external HAR (Hadoop Archive) tables

```
ALTER TABLE ... ARCHIVE PARTITION is not supported on external tables.
```

Affected Versions: All CDH versions

Cloudera Issue: CDH-9638

Object types `Server` and `URI` are not supported in `"SHOW GRANT ROLE roleName on OBJECT objectName"` statements

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Cloudera Issue: CDH-19430

HCatalog Known Issues



Note: As of CDH 5, HCatalog is part of Apache Hive.

There are no notable known issues in this release of HCatalog.

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Hive on Spark (HoS) Known Issues

Hive on Spark queries fail with "Timed out waiting for client to connect" for an unknown reason

If this exception is preceded by logs of the form `"client.RpcRetryingCaller: Call exception..."`, then this failure is due to an unavailable HBase service. On a secure cluster, `spark-submit` will try to obtain delegation tokens from HBase, even though Hive on Spark might not need them. So if HBase is unavailable, `spark-submit` throws an exception.

Workaround: Fix the HBase service, or set `spark.yarn.security.tokens.hbase.enabled` to `false`.

Affected Versions: CDH 5.7.0 and higher

Cloudera Issues: CDH-59591, CDH-59599

Hue Known Issues

Cloudera Hue is vulnerable to Cross-Site Scripting attacks

Multiple Cross-Site Scripting (XSS) vulnerabilities of Cloudera Hue have been found. They allow JavaScript code injection and execution in the application context.

- CVE-2021-29994 - The `Add Description` field in the Table schema browser does not sanitize user inputs as expected.
- CVE-2021-32480 - Default Home direct button in Filebrowser is also susceptible to XSS attack.
- CVE-2021-32481 - The Error snippet dialog of the Hue UI does not sanitize user inputs.

Products affected: Hue

Releases affected:

- CDP Public Cloud 7.2.10 and lower
- CDP Private Cloud Base 7.1.6 and lower
- CDP Private Cloud Plus 1.2 and lower (NOTE: CDP Private Cloud Plus was renamed to CDP Private Cloud Experiences for version 1.2)
- Cloudera Data Warehouse (DWX) 1.1.2-b1484 (CDH 7.2.11.0-59) or lower
- CDH 6.3.4 and lower

User affected: All users of the affected versions

CVE:

- CVE-2021-29994 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32480 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)
- CVE-2021-32481 - 5.5 (Medium) [CVSS:3.1/AV:N/AC:L/PR:L/UI:R/S:U/C:L/I:L/A:L](#)

Severity (Low/Medium/High): Medium

Impact: Security Vulnerabilities as mentioned in the CVEs

Immediate action required:

- **Upgrade (recommended):**
 - CDP Public Cloud users should upgrade to 7.2.11
 - CDP Private Cloud Base users should upgrade to CDP 7.1.7
 - CDP Private Cloud Plus users should upgrade to CDP PVC 1.3
 - Cloudera Data Warehouse users should upgrade to the latest version DWX1.1.2-b1793 & CDH 2021.0.1-b10
 - CDH users should request a patch

Hue allows unsigned SAML assertions

If Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

Products affected: Hue, CDH

Releases affected:

- CDH 5.15.x and earlier
- CDH 5.16.0, 5.16.1
- CDH 6.0.x
- CDH 6.1.x

User affected: All users who are using SAML with Hue.

CVE: CVE-2019-14775

Date/time of detection: January 2019

Detected by: Joel Snape

Severity (Low/Medium/High): High

Impact:

This is a significant security risk as it allows anyone to fake their access validity and therefore access Hue, even if they should not have access. In more detail: if Hue receives an unsigned assertion, it continues to process it as valid. This means it is possible for an end-user to forge or remove the signature and manipulate a SAML assertion to gain access without a successful authentication.

CVE: CVE-2019-14775

Immediate action required:

- **Upgrade (recommended):** Upgrade to a version of CDH containing the fix.
- **Workaround:** None

Addressed in release/refresh/patch:

- CDH 5.16.2
- CDH 6.2.0

Hue external users granted super user privileges in C6

When using either the `LdapBackend` or the `SAML2Backend` authentication backends in Hue, users that are created on login when logging in for the first time are granted superuser privileges in CDH 6. This does not apply to users that are created through the User Admin application in Hue.

Products affected: Hue

Releases affected: CDH 6.0.0, CDH 6.0.1, CDH 6.1.0

Users affected: All user

Date/time of detection: Dec/12/18

Severity (Low/Medium/High): Medium

Impact:

The superuser privilege is granted to any user that logs in to Hue when LDAP or SAML authentication is used. For example, if you have the `create_users_on_login` property set to `true` in the **Hue Service Advanced Configuration Snippet (Safety Valve) for `hue_safety_valve.ini`**, and you are using LDAP or SAML authentication, a user that logs in to Hue for the first time is created with superuser privileges and can perform the following actions:

When the `SAML2Backend` is used, Hue accounts that have superuser privileges can:

- Create/Delete users and groups
- Assign users to groups
- Alter group permissions

However, when the `SAML2Backend` is used, users can only log in to Hue using SAML authentication.

When the `LdapBackend` is used, Hue accounts that have superuser privileges can:

- Synchronize Hue users with your LDAP server
- Create local users and groups (these local users can login to Hue only if the mode of multi-backend authentication is set up as `LdapBackend` and `AllowFirstUserDjangoBackend`)
- Assign users to groups
- Alter group permissions

This impact *does not* apply to the following other scenarios:

- When users are synced with your LDAP server manually by using the User Admin page in Hue.
- When you are using other authentication methods. For example:
 - `AllowFirstUserDjangoBackend`
 - Spnego
 - PAM
 - Oauth

When the `LdapBackend` and `AllowFirstUserDjangoBackend` are used, administrators should note:

- Local users, including users created by unexpected superusers, can login through `AllowFirstUserDjangoBackend`.
- Local users in Hue that created as `hive`, `hdfs`, or `solr` have privileges to access protected data and alter permissions in security app.
- Removing the `AllowFirstUserDjangoBackend` authentication backend can stop local users login to Hue, but it requires the administrator to have Cloudera Manager access



Note: Regardless of the authentication backend in use, the Hue superuser cannot perform the following tasks:

- Make any changes related to Sentry if the user has not been granted any privileges in Sentry. The Hue superuser can only view the Security app in the Hue UI.
- Change the authentication backends. This task requires access to Cloudera Manager.

CVE: CVE-2019-7319

Immediate action required: Upgrade and follow the instructions below.

Addressed in release/refresh/patch: CDH 6.1.1 and CDH 6.2.0

After upgrading to 6.1.1 or later, you must run the following update statement in the Hue database:

```
UPDATE useradmin_userprofile SET `creation_method` = 'EXTERNAL' WHERE `creation_method` = 'CreationMethod.EXTERNAL';
```



Important: If the Hue database is using MySQL, before you run this UPDATE statement, check if safe mode is on by using the following query:

```
SELECT @@SQL_SAFE_UPDATES;
```

If the safe mode is turned on, it returns '1'. You can temporarily set it to off by using the following SET statement:

```
SET SQL_SAFE_UPDATES = 0;
```

After running the update statement, to re-enable safe mode:

```
SET SQL_SAFE_UPDATES = 1;
```

After executing the UPDATE statement, new Hue users are no longer automatically created as superusers.

To find out the list of superusers, run SQL query:

```
SELECT username FROM auth_user WHERE superuser = 1;
```

Users who obtained superuser privilege due to this issue need to be revoked manually by using the following steps:

1. Log in to the Hue UI as an administrator.
2. In the upper right corner of the page, click the user drop-down list and select **Manage User**:
3. In the User Admin page, make sure that the **Users** tab is selected and click the name of the user in the list that you want to edit:
4. In the Hue Users - Edit user page, click **Step 3: Advanced**:
5. Clear the checkbox for **Superuser status**:
6. At the bottom of the page, click **Update user** to save the change.

For the latest update on this issue see the corresponding Knowledge article:

[TSB 2019-360: Hue external users granted super user privileges in C6](#)

Hue does not support the Spark App

Hue does not currently support the Spark application.

Connecting to PostgreSQL Database Fails with Error "No module named psycopg2"

When configuring Hue to use a PostgreSQL database, the connection fails with the following error:

```
Error loading psycopg2 module: No module named psycopg2
```

Workaround: Install the `psycopg2` Python package as documented in [Installing the psycopg2 Python Package](#).

Affected Versions: All CDH 6 versions

Fixed Versions: None

Apache Issue: N/A

Cloudera Issue: CDH-65804

Apache Impala Known Issues

The following sections describe known issues and workarounds in Impala, as of the current production release. This page summarizes the most serious or frequently encountered issues in the current release, to help you make planning decisions about installing and upgrading. Any workarounds are listed here. The bug links take you to the Impala issues site, where you can see the diagnosis and whether a fix is in the pipeline.



Note: The online issue tracking system for Impala contains comprehensive information and is updated in real time. To verify whether an issue you are experiencing has already been reported, or which release an issue is fixed in, search on the [Impala JIRA tracker](#).

Impala Known Issues: Startup

These issues can prevent one or more Impala-related daemons from starting properly.

Impala requires FQDN from hostname command on kerberized clusters

The method Impala uses to retrieve the host name while constructing the Kerberos principal is the `gethostname()` system call. This function might not always return the fully qualified domain name, depending on the network configuration. If the daemons cannot determine the FQDN, Impala does not start on a kerberized cluster.

Workaround: Test if a host is affected by checking whether the output of the `hostname` command includes the FQDN. On hosts where `hostname` only returns the short name, pass the command-line flag `--hostname=fully_qualified_domain_name` in the startup options of all Impala-related daemons.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4978](#)

Impala Known Issues: Crashes and Hangs

These issues can cause Impala to quit or become unresponsive.

Unable to view large catalog objects in catalogd Web UI

In `catalogd` Web UI, you can list metadata objects and view their details. These details are accessed via a link and printed to a string formatted using thrift's `DebugProtocol`. Printing large objects (> 1 GB) in Web UI can crash `catalogd`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6841](#)

Impala Known Issues: Performance

These issues involve the performance of operations such as queries or DDL statements.

Metadata operations block read-only operations on unrelated tables

Metadata operations that change the state of a table, like `COMPUTE STATS` or `ALTER RECOVER PARTITIONS`, may delay metadata propagation of unrelated unloaded tables triggered by statements like `DESCRIBE` or `SELECT` queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6671](#)

Slow queries for Parquet tables with `convert_legacy_hive_parquet_utc_timestamps=true`

The configuration setting `convert_legacy_hive_parquet_utc_timestamps=true` uses an underlying function that can be a bottleneck on high volume, highly concurrent queries due to the use of a global lock while loading time zone information. This bottleneck can cause slowness when querying Parquet tables, up to 30x for scan-heavy queries. The amount of slowdown depends on factors such as the number of cores and number of threads involved in the query.



Note:

The slowdown only occurs when accessing `TIMESTAMP` columns within Parquet files that were generated by Hive, and therefore require the on-the-fly timezone conversion processing.

Workaround: Store the `TIMESTAMP` values as strings in one of the following formats:

- `yyyy-MM-dd`
- `yyyy-MM-dd HH:mm:ss`
- `yyyy-MM-dd HH:mm:ss.SSSSSSSS`

The date can have the 1-9 digits in the fractional part.

Impala implicitly converts such string values to `TIMESTAMP` in calls to date/time functions.

Affected Versions: CDH 6.0.x versions

Fixed Versions: CDH 6.1.0

Apache Issue: [IMPALA-3316](#)

Impala Known Issues: JDBC and ODBC Drivers

These issues affect applications that use the JDBC or ODBC APIs, such as business intelligence tools or custom-written applications in languages such as Java or C++.

Impala Known Issues: Security

These issues relate to security features, such as Kerberos authentication, Sentry authorization, encryption, auditing, and redaction.

Impala logs the session / operation secret on most RPCs at INFO level

Impala logs contain the session / operation secret. With this information a person who has access to the Impala logs might be able to hijack other users' sessions. This means the attacker is able to execute statements for which they do not have the necessary privileges otherwise. Impala deployments where Apache Sentry or Apache Ranger authorization is enabled may be vulnerable to privilege escalation. Impala deployments where audit logging is enabled may be vulnerable to incorrect audit logging.

Restricting access to the Impala logs that expose secrets will reduce the risk of an attack. Additionally, restricting access to trusted users for the Impala deployment will also reduce the risk of an attack. Log redaction techniques can be used to redact secrets from the logs. For more information, see the [Cloudera Manager documentation](#).

For log redaction, users can create a rule with a search pattern: `secret \((string\) [=:].*` And the replacement could be for example: `secret=LOG-REDACTED`

This vulnerability is fixed upstream under [IMPALA-10600](#)

Products affected:

- CDP Private Cloud Base
- CDP Public Cloud
- CDH

Releases affected:

- CDP Private Cloud Base 7.0.3, 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5 and 7.1.6
- CDP Public Cloud 7.0.0, 7.0.1, 7.0.2, 7.1.0, 7.2.0, 7.2.1, 7.2.2, 7.2.6, 7.2.7, and 7.2.8
- All CDH 6.3.4 and lower releases

Users affected: Impala users of the affected releases

Severity (Low/Medium/High): 7.5 (High) [CVSS:3.1/AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:H/A:H](#)

Impact: Unauthorized access

CVE: CVE-2021-28131

Immediate action required: Upgrade to a CDP Private Cloud Base or CDP Public Cloud version containing the fix.

Addressed in release/refresh/patch:

- CDP Private Cloud Base 7.1.7
- CDP Public Cloud 7.2.9 or higher versions

Authenticated user with access to active session or query id can hijack other Impala session or query

If an authenticated Impala user supplies a valid query id to Impala's HS2 and Beeswax interfaces, they can perform operations on other sessions or queries when normally they do not have privileges to do so.

Releases affected:

- CDH 5.16.x and lower
- CDH 6.0.x
- CDH 6.1.x
- CDH 6.2.0

Users affected: All Impala users of affected versions.

Date/time of detection: 21st May 2019

Severity (Low/Medium/High): 7.5 (High) ([CVSS 3.0: AV:N/AC:H/PR:L/UI:N/S:U/C:H/I:N/A:N](#))

Impact: Neither the original issue or the fix affect the normal use of the system.

CVE: CVE-2019-10084

Immediate action required: There is no workaround, upgrade to a version of CDH containing the fix.

Addressed in release/refresh/patch: CDH 6.2.1 and higher versions

XSS Cloudera Manager

Malicious Impala queries can result in Cross Site Scripting (XSS) when viewed in Cloudera Manager.

Products affected: Apache Impala

Releases affected:

- Cloudera Manager 5.13.x, 5.14.x, 5.15.1, 5.15.2, 5.16.1
- Cloudera Manager 6.0.0, 6.0.1, 6.1.0

Users affected: All Cloudera Manager Users

Date/time of detection: November 2018

Severity (Low/Medium/High): High

Impact: When a malicious user generates a piece of JavaScript in the impala-shell and then goes to the Queries tab of the Impala service in Cloudera Manager, that piece of JavaScript code gets evaluated, resulting in an XSS.

CVE: CVE-2019-14449

Immediate action required: There is no workaround, upgrade to the latest available maintenance release.

Addressed in release/refresh/patch:

- Cloudera Manager 5.16.2
- Cloudera Manager 6.0.2, 6.1.1, 6.2.0, 6.3.0

In Impala with Sentry enabled, REVOKE ALL ON SERVER does not remove the privileges granted with the GRANT option

If you grant a role the ALL privilege at the SERVER scope with the WITH GRANT OPTION clause, you cannot revoke the privilege. Although the SHOW GRANT ROLE command will show that the privilege has been revoked immediately after you run the command, the ALL privilege will reappear when you run the SHOW GRANT ROLE command after Sentry refreshes.

Immediate Action Required: Once the privilege has been granted, the only way to remove it is to delete the role.

Affected Versions: CDH 6.0.0, CDH 6.0.1, CDH 5.15.0, CDH 5.15.1, CDH 5.14.x and all prior releases

Fixed Versions: CDH 6.1.0, CDH 6.0.2, CDH 5.16.0, CDH 5.15.2

Cloudera Issue: TSB-341

Impala does not support Heimdal Kerberos

Heimdal Kerberos is not supported in Impala.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-7072](#)

Impala Known Issues: Resources

These issues involve memory or disk usage, including out-of-memory conditions, the spill-to-disk feature, and resource management features.

Handling large rows during upgrade to CDH 5.13 / Impala 2.10 or higher

After an upgrade to CDH 5.13 / Impala 2.10 or higher, users who process very large column values (long strings), or have increased the `--read_size` configuration setting from its default of 8 MB, might encounter capacity errors for some queries that previously worked.

Resolution: After the upgrade, follow the instructions in [Handling Large Rows During Upgrade to CDH 5.13 / Impala 2.10 or Higher](#) to check if your queries are affected by these changes and to modify your configuration settings if so.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-6028](#)

Configuration to prevent crashes caused by thread resource limits

Impala could encounter a serious error due to resource usage under very high concurrency. The error message is similar to:

```
F0629 08:20:02.956413 29088 llvm-codegen.cc:111] LLVM hit fatal error: Unable to allocate section memory!  
terminate called after throwing an instance of  
'boost::exception_detail::clone_impl<boost::exception_detail::error_info_injector<boost::thread_resource_error>  
>'
```

Workaround:

In CDH 6.0 and lower versions of CDH, configure each host running an `impalad` daemon with the following settings:

```
echo 2000000 > /proc/sys/kernel/threads-max
echo 2000000 > /proc/sys/kernel/pid_max
echo 8000000 > /proc/sys/vm/max_map_count
```

In CDH 6.1 and higher versions, it is unlikely that you will hit the thread resource limit. Configure each host running an `impalad` daemon with the following setting:

```
echo 8000000 > /proc/sys/vm/max_map_count
```

To make the above settings durable, refer to your OS documentation. For example, on RHEL 6.x:

1. Add the following line to `/etc/sysctl.conf`:

```
vm.max_map_count=8000000
```

2. Run the following command:

```
sysctl -p
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-5605](#)

Breakpad minidumps can be very large when the thread count is high

The size of the breakpad minidump files grows linearly with the number of threads. By default, each thread adds 8 KB to the minidump size. Minidump files could consume significant disk space when the daemons have a high number of threads.

Workaround: Add `--minidump_size_limit_hint_kb=size` to set a soft upper limit on the size of each minidump file. If the minidump file would exceed that limit, Impala reduces the amount of information for each thread from 8 KB to 2 KB. (Full thread information is captured for the first 20 threads, then 2 KB per thread after that.) The minidump file can still grow larger than the "hinted" size. For example, if you have 10,000 threads, the minidump file can be more than 20 MB.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3509](#)

Process mem limit does not account for the JVM's memory usage

Some memory allocated by the JVM used internally by Impala is not counted against the memory limit for the `impalad` daemon.

Workaround: To monitor overall memory usage, use the `top` command, or add the memory figures in the Impala web UI `/memz` tab to JVM memory usage shown on the `/metrics` tab.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-691](#)

Impala Known Issues: Correctness

These issues can cause incorrect or unexpected results from queries. They typically only arise in very specific circumstances.

Timestamp type-casted to varchar in a binary predicate can produce incorrect result

In an Impala query the timestamp can be type-casted to a varchar of smaller length to convert a timestamp value to a date string. However, if such Impala query is used in a binary comparison against a string literal, it can produce incorrect results, because of a bug in the expression rewriting code. The following is an example of this:

```
> select * from (select cast('2018-12-11 09:59:37' as timestamp) as ts) tbl where cast(ts
as varchar(10)) = '2018-12-11';
```

The output will have 0 rows.

Affected version:

- CDH 5.15.0, 5.15.1, 5.15.2, 5.16.0, 5.16.1
- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed versions:

- CDH 5.16.2
- CDH 6.2.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-358: Timestamp type-casted to varchar in a binary predicate can produce incorrect result](#)

Incorrect result due to constant evaluation in query with outer join

An OUTER JOIN query could omit some expected result rows due to a constant such as FALSE in another join clause. For example:

```
explain SELECT 1 FROM alltypestiny a1
INNER JOIN alltypesagg a2 ON a1.smallint_col = a2.year AND false
RIGHT JOIN alltypes a3 ON a1.year = a3.bigint_col;
+-----+
| Explain String |
+-----+
| Estimated Per-Host Requirements: Memory=1.00KB VCores=1 |
| 00:EMPTYSET |
+-----+
```

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-3094](#)

BST between 1972 and 1995

The calculation of start and end times for the BST (British Summer Time) time zone could be incorrect between 1972 and 1995. Between 1972 and 1995, BST began and ended at 02:00 GMT on the third Sunday in March (or second Sunday when Easter fell on the third) and fourth Sunday in October. For example, both function calls should return 13, but actually return 12, in a query such as:

```
select
extract(from_utc_timestamp(cast('1970-01-01 12:00:00' as timestamp), 'Europe/London'),
"hour") summer70start,
extract(from_utc_timestamp(cast('1970-12-31 12:00:00' as timestamp), 'Europe/London'),
"hour") summer70end;
```

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.1

Apache Issue: [IMPALA-3082](#)

% escaping does not work correctly in a LIKE clause

If the final character in the RHS argument of a LIKE operator is an escaped \% character, it does not match a % final character of the LHS argument.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2422](#)

Crash: `impala::Coordinator::ValidateCollectionSlots`

A query could encounter a serious error if includes multiple nested levels of `INNER JOIN` clauses involving subqueries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2603](#)

Impala Known Issues: Metadata

These issues affect how Impala interacts with metadata. They cover areas such as the metastore database and the Impala Catalog Server daemon.

Concurrent catalog operations with heavy DDL workloads can cause queries with `SYNC_DDL` to fail fast

When Catalog Server is under a heavy load with concurrent catalog operations of long running DDLs, queries running with the `SYNC_DDL` query option can fail with the following message:

```
ERROR: CatalogException: Couldn't retrieve the catalog topic
version for the SYNC_DDL operation after 3 attempts.The operation has
been successfully executed but its effects may have not been
broadcast to all the coordinators.
```

The catalog operation is actually successful as the change has been committed to HMS and Catalog Server cache, but when Catalog Server notices a longer than expected time for it to broadcast the changes, it fails fast.

The coordinator daemons eventually sync up in the background.

Affected Versions: CDH versions 6.0 and 6.1

Apache Issue: [IMPALA-7961](#) / CDH-76345

Impala Known Issues: Interoperability

These issues affect the ability to interchange data between Impala and other systems. They cover areas such as data types and file formats.

Queries Stuck on Failed HDFS Calls and not Timing out

In CDH 6.2 / Impala 3.2 and higher, if the following error appears multiple times in a short duration while running a query, it would mean that the connection between the `impalad` and the HDFS NameNode is in a bad state and hence the `impalad` would have to be restarted:

```
"hdfsOpenFile() for <filename> at backend <hostname:port> failed to finish before the
<hdfs_operation_timeout_sec> second timeout "
```

In CDH 6.1 / Impala 3.1 and lower, the same issue would cause Impala to wait for a long time or hang without showing the above error message.

Workaround: Restart the `impalad` in the bad state.

Affected Versions: All versions of Impala

Apache Issue: [HADOOP-15720](#)

Deviation from Hive behavior: Out of range values float/double values are returned as maximum allowed value of type (Hive returns NULL)

Impala behavior differs from Hive with respect to out of range float/double values. Out of range values are returned as maximum allowed value of type (Hive returns NULL).

Workaround: None

Affected Versions: All CDH 6 versions

Configuration needed for Flume to be compatible with Impala

For compatibility with Impala, the value for the Flume HDFS Sink `hdfs.writeFormat` must be set to `Text`, rather than its default value of `Writable`. The `hdfs.writeFormat` setting must be changed to `Text` before creating data files with Flume; otherwise, those files cannot be read by either Impala or Hive.

Resolution: This information has been requested to be added to the upstream Flume documentation.

Affected Versions: All CDH 6 versions

Cloudera Issue: CDH-13199

Avro Scanner fails to parse some schemas

The default value in Avro schema must match the first union type. For example, if the default value is `null`, then the first type in the `UNION` must be `"null"`.

Workaround: Swap the order of the fields in the schema specification. For example, use `["null", "string"]` instead of `["string", "null"]`. Note that the files written with the problematic schema must be rewritten with the new schema because Avro files have embedded schemas.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-635](#)

Impala BE cannot parse Avro schema that contains a trailing semi-colon

If an Avro table has a schema definition with a trailing semicolon, Impala encounters an error when the table is queried.

Workaround: Remove trailing semicolon from the Avro schema.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1024](#)

Incorrect results with basic predicate on CHAR typed column

When comparing a `CHAR` column value to a string literal, the literal value is not blank-padded and so the comparison might fail when it should match.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1652](#)

Impala Known Issues: Limitations

These issues are current limitations of Impala that require evaluation as you plan how to integrate Impala into your data management workflow.

Set limits on size of expression trees

Very deeply nested expressions within queries can exceed internal Impala limits, leading to excessive memory usage.

Workaround: Avoid queries with extremely large expression trees. Setting the query option `disable_codegen=true` may reduce the impact, at a cost of longer query runtime.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-4551](#)

Impala does not support running on clusters with federated namespaces

Impala does not support running on clusters with federated namespaces. The `impalad` process will not start on a node running such a filesystem based on the `org.apache.hadoop.fs.viewfs.ViewFs` class.

Workaround: Use standard HDFS on all Impala nodes.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-77](#)

Hue and BDR require separate parameters for Impala Load Balancer

Cloudera Manager supports a single parameter for specifying the Impala Daemon Load Balancer. However, because BDR and Hue need to use different ports when connecting to the load balancer, it is not possible to configure the load balancer value so that BDR and Hue will work correctly in the same cluster.

Workaround: To configure BDR with Impala, use the load balancer configuration either without a port specification or with the Beeswax port.

To configure Hue, use the **Hue Server Advanced Configuration Snippet (Safety Valve) for `impalad_flags`** to specify the load balancer address with the HiveServer2 port.

Affected Versions: CDH versions from 5.11 to 6.0.1

Cloudera Issue: [OPSAPS-46641](#)

Impala Known Issues: Miscellaneous / Older Issues

These issues do not fall into one of the above categories or have not been categorized yet.

Unable to Correctly Parse the Terabyte Unit

Impala does not support parsing strings that contain "TB" when used as a unit for terabytes. The flags related to memory limits may be affected, such as the flags for scratch space and data cache.

Workaround: Use other supported units to specify values, e.g. GB or MB.

Affected Versions: CDH 6.3.x and lower versions

Fixed Versions: CDH 6.4.0

Apache Issue: [IMPALA-8829](#)

A failed CTAS does not drop the table if the insert fails

If a `CREATE TABLE AS SELECT` operation successfully creates the target table but an error occurs while querying the source table or copying the data, the new table is left behind rather than being dropped.

Workaround: Drop the new table manually after a failed `CREATE TABLE AS SELECT`.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-2005](#)

Casting scenarios with invalid/inconsistent results

Using a `CAST` function to convert large literal values to smaller types, or to convert special values such as `NaN` or `Inf`, produces values not consistent with other database systems. This could lead to unexpected results from queries.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-1821](#)

Impala Parser issue when using fully qualified table names that start with a number

A fully qualified table name starting with a number could cause a parsing error. In a name such as `db.571_market`, the decimal point followed by digits is interpreted as a floating-point number.

Workaround: Surround each part of the fully qualified name with backticks (```).

Affected Versions: All CDH 6 versions

Fixed Versions: CDH 6.2.0

Apache Issue: [IMPALA-941](#)

Impala should tolerate bad locale settings

If the `LC_*` environment variables specify an unsupported locale, Impala does not start.

Workaround: Add `LC_ALL="C"` to the environment settings for both the Impala daemon and the Statestore daemon. See [Modifying Impala Startup Options](#) for details about modifying these environment settings.

Resolution: Fixing this issue would require an upgrade to Boost 1.47 in the Impala distribution.

Affected Versions: All CDH 6 versions

Apache Issue: [IMPALA-532](#)

EMC Isilon Known Issues

CDH 6.0 is not currently supported on EMC Isilon.

Affected Versions: CDH 6.0.0

Apache Kafka Known Issues

Potential to bypass transaction and idempotent ACL checks in Apache Kafka

It is possible to manually craft a Produce request which bypasses transaction and idempotent ACL validation. Only authenticated clients with Write permission on the respective topics are able to exploit this vulnerability.

Products affected:

- CDH
- CDK Powered by Apache Kafka

Releases affected:

- CDH versions 6.0.x, 6.1.x, 6.2.0
- CDK versions 3.0.x, 3.1.x, 4.0.x

Users affected: All users who run Kafka in CDH and CDK.

Date/time of detection: September, 2018

Severity (Low/Medium/High): 7.1 (High) ([CVSS:3.0/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:H/A:H](#))

Impact: Attackers can exploit this issue to bypass certain security restrictions to perform unauthorized actions. This can aid in further attacks.

CVE: CVE-2018-17196

Immediate action required: Update to a version of CDH containing the fix.

Addressed in release/refresh/patch:

- CDH 6.2.1, 6.3.2
- CDK 4.1.0

Knowledge article: For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-378: Potential to bypass transaction and idempotent ACL checks in Apache Kafka](#)

Topics Created with the "kafka-topics" Tool Might Not Be Secured

Topics that are created and deleted via Kafka are secured (for example, auto created topics). However, most topic creation and deletion is done via the `kafka-topics` tool, which talks directly to ZooKeeper or some other third-party tool that talks directly to ZooKeeper. Because security is the responsibility of ZooKeeper authorization and authentication, Kafka cannot prevent users from making ZooKeeper changes. Anyone with access to ZooKeeper can create and delete topics. They will not be able to describe, read, or write to the topics even if they can create them.

The following commands talk directly to ZooKeeper and therefore are not secured via Kafka:

- `kafka-topics.sh`
- `kafka-configs.sh`
- `kafka-preferred-replica-election.sh`
- `kafka-reassign-partitions.sh`

"offsets.topic.replication.factor" Must Be Less Than or Equal to the Number of Live Brokers

The `offsets.topic.replication.factor` broker configuration is now enforced upon auto topic creation. Internal auto topic creation will fail with a `GROUP_COORDINATOR_NOT_AVAILABLE` error until the cluster size meets this replication factor requirement.

Kafka May Be Stuck with Under-replicated Partitions after ZooKeeper Session Expires

This problem can occur when your Kafka cluster includes a large number of under-replicated Kafka partitions. One or more broker logs include messages such as the following:

```
[2016-01-17 03:36:00,888] INFO Partition [__samza_checkpoint_event-creation_1,3] on
broker 3: Shrinking ISR for partition [__samza_checkpoint_event-creation_1,3] from 6,5
to 5 (kafka.cluster.Partition)
[2016-01-17 03:36:00,891] INFO Partition [__samza_checkpoint_event-creation_1,3] on
broker 3: Cached zkVersion [66] not equal to that in zookeeper, skip updating ISR
(kafka.cluster.Partition)
```

There will also be an indication of the ZooKeeper session expiring in one or more Kafka broker logs around the same time as the previous errors:

```
INFO zookeeper state changed (Expired) (org.I0Itec.zkclient.ZkClient)
```

The log is typically in `/var/log/kafka` on each host where a Kafka broker is running. The location is set by the property `kafka.log4j.dir` in Cloudera Manager. The log name is `kafka-broker-hostname.log`. In diagnostic bundles, the log is under `logs/hostname-ip-address/`.

Workaround: To move forward after seeing this problem, restart the affected Kafka brokers. You can restart individual brokers from the **Instances** tab in the Kafka service page in Cloudera Manager.



Note: If restarting the brokers does not resolve the problem, you might not have this issue; see [KAFKA-3083 A soft failure in controller may leave a topic partition in an inconsistent state](#). This problem also involves the ZooKeeper session expiring, but will not involve the error message with `Cached zkVersion [XX] not equal to that in zookeeper`.



Note:

To reduce the chances of this issue happening again, do what you can to make sure ZooKeeper sessions do not expire:

- Reduce the potential for long garbage collection pauses by brokers:
 - Use a better garbage collection mechanism in the JVM, such as G1GC. You can do this by adding `-XX:+UseG1GC` in the `broker_java_opts`.
 - Increase broker heap size if it is too small (`broker_max_heap_size`). Be careful that you don't choose a heap size that can cause out-of-memory problems given all the services running on the node.
- Increase the ZooKeeper session timeout configuration on brokers (`zookeeper.session.timeout.ms`), to reduce the likelihood that sessions expire.
- Ensure ZooKeeper itself is well resourced and not overwhelmed so it can respond. For example, it is highly recommended to locate the ZooKeeper log directory on its own disk.

Affected Versions: CDK 1.4.x, 2.0.x, 2.1.x, 2.2.x

Fixed Versions:

- **Full Fix:** CDH 6.1.0
- **Partial Fix:** CDH 6.0.0, Kafka implementations with CDH 6.0.0 are less likely to encounter this issue.

Apache Issue: [KAFKA-2729](#)

Cloudera Issue: CDH-42514

Requests Fail When Sending to a Nonexistent Topic with "auto.create.topics.enable" Set to True

The first few `produce` requests fail when sending to a nonexistent topic with `auto.create.topics.enable` set to true.

Workaround: Increase the number of retries in the Producer configuration setting `retries`.

Custom Kerberos Principal Names Cannot Be Used for Kerberized ZooKeeper and Kafka instances

When using ZooKeeper authentication and a custom Kerberos principal, Kerberos-enabled Kafka does not start.

Workaround: None. You must disable ZooKeeper authentication for Kafka or use the default Kerberos principals for ZooKeeper and Kafka.

Performance Degradation When SSL Is Enabled

Significant performance degradation can occur when SSL is enabled. The impact varies depending on your CPU, JVM version, and message size. Consumers are typically more affected than producers.

Workaround: Configure brokers and clients with `ssl.secure.random.implementation = SHA1PRNG`. It often reduces this degradation drastically, but its effect is CPU and JVM dependent.

Affected Versions: CDK 2.x and later

Fixed Versions: None

Apache Issue: KAFKA-2561

Cloudera Issue: None

The Idempotent and Transactional Capabilities of Kafka are Incompatible with Sentry

The idempotent and transactional capabilities of Kafka are not compatible with Sentry. The issue is due to Sentry being unable to handle authorization policies for Kafka transactions. As a result, users cannot use Kafka transaction in combination with Sentry.

Workaround: Use the Sentry super user in applications where idempotent producing is a requirement or disable Sentry.

Affected Versions: CDK 4.0 and later, CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.3.0

Fixed Versions: CDH 6.2.1, 6.3.1

Apache Issue: N/A

Cloudera Issue: CDH-80606

Kafka Garbage Collection Logs are Written to the Process Directory

By default Kafka garbage collection logs are written to the CDH process directory. Changing the default path for these log files is currently unsupported.

Workaround: N/A

Affected Versions: All

Fixed Versions: N/A

Cloudera Issue: OPSAPS-43236

MirrorMaker Does Not Start When Sentry is Enabled

When MirrorMaker is used in conjunction with Sentry, MirrorMaker reports an authorization issue and does not start. This is due to Sentry being unable to authorize the `kafka_mirror_maker` principal which is automatically created.

Workaround: Complete the following steps prior to enabling Sentry:

1. Create the `kafka_mirror_maker` Linux user ID and the `kafka_mirror_maker` Linux group ID on the MirrorMaker hosts. Use the following command:

```
useradd kafka_mirror_maker
```

2. Create the necessary Sentry rules for the `kafka_mirror_maker` group.



Note: Alternatively, you can add the `kafka_mirror_maker` user to `super.users`, this bypasses authorization.

Affected Versions: CDH 6.0.0 and later

Fixed Versions: N/A

Apache Issue: N/A

Cloudera Issue: CDH-53706

Apache Kudu Known Issues

The following are known bugs and issues in Kudu. Note that this list is not exhaustive, and is meant to communicate only the most important known issues.

Kudu Masters unable to join back after a restart

In a multi master Kudu environment, if a master is restarted or goes offline for a few minutes, it can occasionally have trouble joining the cluster on startup. For example, if this happens in case of three kudu masters, and one of the other two masters is stopped or dies during this time, then the overall Kudu cluster is down because the majority of the masters are not running.

This issue is resolved by the [KUDU-2748](#) upstream JIRA.

Products affected: Apache Kudu

Affected version:

- CDH 5.14.0, 5.14.2, 5.14.4
- CDH 5.15.0, 5.15.1, 5.15.2
- CDH 5.16.1, 5.16.2
- CDH 6.0.0, 6.0.1
- CDH 6.1.0, 6.1.1
- CDH 6.2.0, 6.2.1

Fixed version:

- CDH 6.3.0

For the latest update on this issue see the corresponding Knowledge article: [TSB 2020-442: Kudu Masters unable to join back after a restart](#)

CFile Checksum Failure Causes Queries to Fail

When a CFile checksum fails, for example, due to a underlying disk corruption, queries against the replica will fail with an error message, such as this:

```
Unable to advance iterator: Corruption: checksum error on CFile block
```

Workaround: Remove the corrupted replica from the tablet's Raft configuration. See [Kudu Troubleshooting Guide](#) for the detailed steps.

Affected Versions: CDH 6.0.x and lower

Apache Issue: [KUDU-2469](#)

C++ Client Fails to Re-acquire Authentication Token in Multi-master Clusters

A security-related issue can cause Impala queries to start failing on busy clusters in the following scenario:

- The cluster runs with the `--rpc_authentication` set as `optional` or `required`. The default is `optional`. Secure clusters use `required`.
- The cluster is using multiple masters.
- Impala queries happen frequently enough that the leader master connection to some `impalad` isn't idle-closed (more than 1 query per 65 seconds).
- The connection stays alive for longer than the authentication token timeout (1 week by default).
- A master leadership change occurs after the authentication token expiration.

Impala queries will start failing with errors in the `impalad` logs like:

```
I0904 13:53:08.748968 95857 client-internal.cc:283] Unable to determine the new leader
Master: Not authorized: Client connection negotiation failed: client connection to
10.164.44.13:7051: FATAL_INVALID_AUTHENTICATION_TOKEN: Not authorized: authentication
token expired
I0904 13:53:10.389009 95861 status.cc:125] Unable to open Kudu table: Timed out:
GetTableSchema timed out after deadline expired
@ 0x95b1e9 impala::Status::Status()
@ 0xff22d4 impala::KuduScanNodeBase::Open()
@ 0xff101e impala::KuduScanNode::Open()
@ 0xb73ced impala::FragmentInstanceState::Open()
@ 0xb7532b impala::FragmentInstanceState::Exec()
@ 0xb64ae8 impala::QueryState::ExecFInstance()
@ 0xd15193 impala::Thread::SuperviseThread()
@ 0xd158d4 boost::detail::thread_data<>::run()
@ 0x129188a (unknown)
@ 0x7f717ceade25 start_thread
@ 0x7f717cbdb34d __clone
```

Impala shell queries will fail with a message like:

```
Unable to open Kudu table: Timed out: GetTableSchema timed out after deadline expired
```

Workaround:

- Restart the affected Impala Daemons. Restarting a daemon ensures the problem will not reoccur for at least the authentication token lifetime, which defaults to one week.
- Increase the authentication token lifetime (`--authn_token_validity_seconds`). Beware that raising this lifetime increases the window of vulnerability of the cluster if a client is compromised. It is recommended that you keep the token lifetime at one month maximum for a secure cluster. For unsecured clusters, a longer token lifetime is acceptable, and a 3 month lifetime is recommended.

Affected Versions: From CDH 5.11 through CDH 6.0.1

Apache Issue: [KUDU-2580](#)

Timeout Possible with Log Force Synchronization Option

If the Kudu master is configured with the `-log_force_fsync_all` option, tablet servers and clients will experience frequent timeouts, and the cluster may become unusable.

Affected Versions: All CDH 6 versions

Longer Startup Times with a Large Number of Tablets

If a tablet server has a very large number of tablets, it may take several minutes to start up. It is recommended to limit the number of tablets per server to 1000 or fewer. The maximum allowed number of tablets is 2000 per server. Consider this limitation when pre-splitting your tables. If you notice slow start-up times, you can monitor the number of tablets per server in the web UI.

Affected Versions: All CDH 6 versions

Fault Tolerant Scan Memory Issue

Unlike regular scans, fault tolerant scans will allocate all required memory when the scan begins rather than as it progresses. This can be significant for big tablets. Moreover, this memory usage isn't counted towards the tablet server's overall memory limit, raising the likelihood of the tablet server being out-of-memory killed by the kernel.

Affected Versions: CDH 6.2 / Kudu 1.9 and lower

Apache Issue: [KUDU-2466](#)

Descriptions for Kudu TLS/SSL Settings in Cloudera Manager

Use the descriptions in the following table to better understand the TLS/SSL settings in the Cloudera Manager Admin Console.

| Field | Usage Notes |
|---|--|
| Kerberos Principal | Set to the default principal, <code>kudu</code> . |
| Enable Secure Authentication And Encryption | Select this checkbox to enable authentication <i>and</i> RPC encryption between all Kudu clients and servers, as well as between individual servers. Only enable this property after you have configured Kerberos. |
| Master TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu master host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to the Kudu master web UI. |
| Tablet Server TLS/SSL Server Private Key File (PEM Format) | Set to the path containing the Kudu tablet server host's private key (PEM-format). This is used to enable TLS/SSL encryption (over HTTPS) for browser-based connections to Kudu tablet server web UIs. |
| Master TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu master host's private key (set in Master TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Tablet Server TLS/SSL Server Certificate File (PEM Format) | Set to the path containing the signed certificate (PEM-format) for the Kudu tablet server host's private key (set in Tablet Server TLS/SSL Server Private Key File). The certificate file can be created by concatenating all the appropriate root and intermediate certificates required to verify trust. |
| Master TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Tablet Server TLS/SSL Server CA Certificate (PEM Format) | Disregard this field. |
| Enable TLS/SSL for Master Server | Enables HTTPS encryption on the Kudu master web UI. |
| Enable TLS/SSL for Tablet Server | Enables HTTPS encryption on the Kudu tablet server web UIs. |

Affected Versions: All CDH 6 versions

Apache Oozie Known Issues

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used

Oozie database upgrade fails when PostgreSQL version 9.6 or higher is used due to a sys table change in PostgreSQL from version 9.5 to 9.6. The failure only happens if Oozie uses a JDBC driver earlier than 9.4.1209.

Workaround:

1. After the parcels of the new version are distributed, replace the PostgreSQL JDBC driver with a newer one (version 9.4.1209 or higher) in the new parcel, at the following locations:

- `/opt/cloudera/parcels/${newparcel.version}/lib/oozie/lib/`
- `/opt/cloudera/parcels/${newparcel.version}/lib/oozie/libtools/`

2. Perform the upgrade.



Note: If you already started the upgrade and the process stops with an error message about missing columns, you can change the drivers at that point of the process as well, and resume the upgrade.

If your cluster is installed from packages, you must change the drivers at the following locations:

- /usr/lib/oozie/libtools/
- /usr/lib/oozie/lib/



Note: You can change the driver after the packages installation, but before running the CDH upgrade wizard. You can also do it during the update process, when the error occurs.

You can download the driver from the [PostgreSQL JDBC driver homepage](#).

Affected Versions: CDH 6.0.0 and higher

Fixed Version: CDH 6.2.1 and higher

Cloudera Issue: CDH-75951

External ID of MapReduce action not filled properly and failing MR job treated as SUCCEEDED

When a MapReduce action is launched from Oozie, the external ID field is not filled properly. It gets populated with the YARN ID of the LauncherAM, not with the ID of the actual MR job. If the MR job is submitted successfully and then fails, it will be treated as a successfully executed action.

Affected Versions: CDH 6.0.0 and higher

Fixed Version: CDH 6.1.0 and higher

Apache Issue: [OOZIE-3298](#)

Oozie jobs fail (gracefully) on secure YARN clusters when JobHistory server is down

If the JobHistory server is down on a YARN (MRv2) cluster, Oozie attempts to submit a job, by default, three times. If the job fails, Oozie automatically puts the workflow in a `SUSPEND` state.

Workaround: When the JobHistory server is running again, use the `resume` command to tell Oozie to continue the workflow from the point at which it left off.

Affected Versions: CDH 5 and higher

Cloudera Issue: CDH-14623

Apache Parquet Known Issues

There are no known issues in Parquet.

Apache Pig Known Issues

There are no known issues in this release.

Cloudera Search Known Issues

The current release includes the following known limitations:

Default Solr core names cannot be changed (limitation)

Although it is technically possible to give user-defined Solr core names during core creation, it is to be avoided in the context of Cloudera Search. Cloudera Manager expects core names in the default "collection_shardX_replicaY" format. Altering core names results in Cloudera Manager being unable to fetch Solr metrics for the given core and this, eventually, may corrupt data collection for co-located core, or even shard and server level charts.

Processing UpdateRequest with delegation token throws NullPointerException

When using the Spark Crunch Indexer or another client application which utilizes the SolrJ API to send Solr Update requests with delegation token authentication, the server side processing of the request might fail with a `NullPointerException`.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Apache Issue: SOLR-13921

Cloudera Issue: CDH-82599

Solr service with no added collections causes the upgrade process to fail

CDH 5.x to CDH 6.x upgrade fails while performing the bootstrap collections step of the `solr-upgrade.sh` script with the error message:

```
Failed to execute command Bootstrap Solr Collections on service Solr
```

if there are no collections present in Solr.

Workaround: If there are no collections added to it, remove the Solr service from your cluster *before* you start the upgrade.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82042

HBase Lily indexer might fail to write role log files

In certain scenarios the HBase Lily Indexer (Key-Value Store Indexer) fails to write its role log files.

Workaround: None

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82342

Adding a new indexer instance to HBase Lily Indexer fails with `GSSEException`

When Kerberos authentication is enabled and adding a new indexer instance to HBase Lily Indexer (Key-Value Store Indexer), the authentication might fail when Lily is communicating to the HBase Master process, throwing a similar Exception:

```
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSEException: No valid credentials provided (Mechanism level: Failed to find any Kerberos tgt)]
```

Workaround: Ensure that the Lily indexer has a Sentry dependency configured by following these steps:

1. Go to **Cloudera Manager > Key-Value Store indexer > Configuration**.
2. Make sure the **Sentry Service** configuration option points to a Sentry service instance instead of **none**.

The workaround does not require defining any Sentry roles or privileges, it is just to trigger a code execution path which will authenticate the HBase service user.

Affected Versions: CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1, 6.2.0, 6.2.1, 6.3.0, 6.3.1, 6.3.2

Fixed Version: CDH 6.3.3

Cloudera Issue: CDH-82566

CDH Upgrade fails to delete Solr data from HDFS

The CDH upgrade process fails to delete Solr data from HDFS and the recreated collections fail to be initialized due to the existing indexes.

Workaround: Perform the following steps *after* you run the CDH Upgrade wizard and *before* you finalize the HDFS upgrade:

1. Log in to the Cloudera Manager Admin Console.
2. Go to the Solr service page.
3. Stop the Solr service and dependent services. Click **Actions > Stop**.
4. Click **Actions > Reinitialize Solr State for Upgrade**.
5. Click **Actions > Bootstrap Solr Configuration**.
6. Start the Solr and dependent services. Click **Actions > Start**.
7. Click **Actions > Bootstrap Solr Collections**.

Affected Versions: CDH 6.0.0

Fixed Versions: Cloudera Manager 6.0.1

Cloudera Issue: OPSAPS-47502

Solr Service reports stale configurations even after restart

Solr reports stale configurations, and the Solr Server role fails to start with the following error: Role failed to start due to error: The archive already contains `creds.localjceks`. The issue occurs if your deployment has Solr and HDFS uses LDAP Group Mapping.

Workaround: If you have a CDH 5 cluster and use LDAP Group Mapping, do not upgrade to CDH 6.0.0. If you have a CDH 6.0.0 cluster, disable LDAP Group Mappings.

Affected Versions: Cloudera Manager 6.0.0 and CDH 6.0.0

Fixed Versions: Cloudera Manager 6.0.1

Cloudera Issue: OPSAPS-47321

Solr SQL, Graph, and Stream Handlers are Disabled if Collection Uses Document-Level Security

The Solr SQL, Graph, and Stream handlers do not support document-level security, and are disabled if document-level security is enabled on the collection. If necessary, these handlers can be re-enabled by setting the following Java system properties, but document-level security is not enforced for these handlers:

- SQL: `solr.sentry.enableSqlQuery=true`
- Graph: `solr.sentry.enableGraphQuery=true`
- Stream: `solr.sentry.enableStreams=true`

Workaround: None

Affected Versions: All CDH 6 releases

Cloudera Issue: CDH-66345

Collection Creation No Longer Supports Automatically Selecting A Configuration If Only One Exists

Before CDH 5.5.0, a collection could be created without specifying a configuration. If no `-c` value was specified, then:

- If there was only one configuration, that configuration was chosen.
- If the collection name matched a configuration name, that configuration was chosen.

Search for CDH 5.5.0 includes multiple built-in configurations. As a result, there is no longer a case in which only one configuration can be chosen by default.

Workaround: Explicitly specify the collection configuration to use by passing `-c <configName>` to `solrctl collection --create`.

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-34050

CrunchIndexerTool which includes Spark indexer requires specific input file format specifications

If the `--input-file-format` option is specified with `CrunchIndexerTool`, then its argument must be `text`, `avro`, or `avroParquet`, rather than a fully qualified class name.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-22190

The `quickstart.sh` file does not validate ZooKeeper and the NameNode on some operating systems

The `quickstart.sh` file uses the `timeout` function to determine if ZooKeeper and the NameNode are available. To ensure this check can be complete as intended, the `quickstart.sh` determines if the operating system on which the script is running supports `timeout`. If the script detects that the operating system does not support `timeout`, the script continues without checking if the NameNode and ZooKeeper are available. If your environment is configured properly or you are using an operating system that supports `timeout`, this issue does not apply.

Workaround: This issue only occurs in some operating systems. If `timeout` is not available, the `quickstart` continues and final validation is always done by the MapReduce jobs and Solr commands that are run by the `quickstart`.

Affected Versions: All

Cloudera Issue: CDH-19923

Field value class guessing and Automatic schema field addition are not supported with the `MapReduceIndexerTool` nor the `HBaseMapReduceIndexerTool`

The `MapReduceIndexerTool` and the `HBaseMapReduceIndexerTool` can be used with a Managed Schema created via NRT indexing of documents or via the Solr Schema API. However, neither tool supports adding fields automatically to the schema during ingest.

Workaround: Define the schema before running the `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool`. In non-schemaless mode, define in the schema using the `schema.xml` file. In schemaless mode, either define the schema using the Solr Schema API or index sample documents using NRT indexing before invoking the tools. In either case, Cloudera recommends that you verify that the schema is what you expect using the List Fields API command.

Affected Versions: All

Cloudera Issue: CDH-26856

The *Browse* and *Spell* Request Handlers are not enabled in schemaless mode

The *Browse* and *Spell* Request Handlers require certain fields be present in the schema. Since those fields cannot be guaranteed to exist in a Schemaless setup, the *Browse* and *Spell* Request Handlers are not enabled by default.

Workaround: If you require the "Browse" and "Spell" Request Handlers, add them to the `solrconfig.xml` configuration file. Generate a non-schemaless configuration to see the usual settings and modify the required fields to fit your schema.

Affected Versions: All

Cloudera Issue: CDH-19407

Enabling blockcache writing may result in unusable indexes

It is possible to create indexes with `solr.hdfs.blockcache.write.enabled` set to `true`. Such indexes may appear corrupt to readers, and reading these indexes may irreversibly corrupt indexes. Blockcache writing is disabled by default.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-17978

Users with insufficient Solr permissions may receive a "Page Loading" message from the Solr Web Admin UI

Users who are not authorized to use the Solr Admin UI are not given page explaining that access is denied, and instead receive a web page that never finishes loading.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-58276

Using `MapReduceIndexerTool` or `HBaseMapReduceIndexerTool` multiple times may produce duplicate entries in a collection.

Repeatedly running the `MapReduceIndexerTool` on the same set of input files can result in duplicate entries in the Solr collection. This occurs because the tool can only insert documents and cannot update or delete existing Solr documents. This issue does not apply to the `HBaseMapReduceIndexerTool` unless it is run with more than zero reducers.

Workaround: To avoid this issue, use `HBaseMapReduceIndexerTool` with zero reducers. This must be done without Kerberos.

Affected Versions: All

Cloudera Issue: CDH-15441

Deleting collections might fail if hosts are unavailable

It is possible to delete a collection when hosts that host some of the collection are unavailable. After such a deletion, if the previously unavailable hosts are brought back online, the deleted collection may be restored.

Workaround: Ensure all hosts are online before deleting collections.

Affected Versions: All

Cloudera Issue: CDH-58694

Cloudera Search configuration migration script fails to detect incompatible `SecureAdminHandlers` request handler

The `SecureAdminHandlers` request handler is incompatible with Apache Solr 7, which is used in CDH 6. The Cloudera Search configuration migration script fails to detect this incompatibility.

Workaround: Remove `SecureAdminHandlers` request handlers from the `solrconfig.xml` files of any configuration set that uses them during the [pre-upgrade configuration migration](#).

Affected Versions: CDH 6.0.0

Fixed Versions: CDH 6.0.1

Cloudera Issue: CDH-72239

Saving search results is not supported

Cloudera Search does not support the ability to save search results.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-21162

HDFS Federation is not supported

Cloudera Search does not support HDFS Federation.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-11357

Solr contrib modules are not supported

Solr *contrib* modules are not supported (Morphlines, Spark Crunch indexer, MapReduce and Lily HBase indexers are part of the Cloudera Search product itself, therefore they are supported).

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72658

Using the Sentry Service with Cloudera Search may introduce latency

Using the Sentry Service with Cloudera Search may introduce latency because authorization requests must be sent to the Sentry Service.

Workaround: You can alleviate this latency by enabling caching for the Sentry Service. For instructions, see: [Enabling Caching for the Sentry Service](#).

Affected Versions: All

Cloudera Issue: CDH-73407

Solr Sentry integration limitation where two Solr deployments depend on the same Sentry service

If multiple Solr instances are configured to depend on the same Sentry service, it is not possible to create unique Solr Sentry privileges per Solr deployment. Since privileges are enforced in all Solr instances simultaneously, you cannot add distinct privileges that apply to one Solr cluster, but not to another.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-72676

Collection state goes down after Solr SSL

If you enable TLS/SSL on a Solr instance with existing collections, the collections will break and become unavailable. Collections created after enabling TLS/SSL are not affected by this issue.

Workaround: Recreate the collection after enabling TLS. For more information, see [How to update existing collections in Non-SSL to SSL in Solr](#).

Affected Versions: All

Cloudera Issue: CDPD-4139*Apache Sentry Known Issues*

Sentry does not support Kafka topic name with more than 64 characters

A Kafka topic name can have 249 characters, but Sentry only supports topic names up to 64 characters.

Workaround: Keep Kafka topic names to 64 characters or less.

Affected Versions: All CDH 5.x and 6.x versions

Cloudera Issue: CDH-64317

When granting privileges, a single transaction per grant causes long delays

Sentry takes a long time to grant or revoke a large number of column-level privileges that are requested in a single statement. For example if you execute the following command:

```
GRANT SELECT(col1, col2, ...) ON TABLE table1;
```

Sentry applies the grants to each column separately and the refresh process causes long delays.

Workaround: Split the grant statement up into smaller chunks. This prevents the refresh process from causing delays.

Affected Versions:

- CDH: 5.14.4
- CDH: 5.15.1
- CDH: 5.16.0
- CDH: 6.1.0

Fixed Versions:

- CDH 5.16.1 and above
- CDH 6.2.0 and above

Cloudera Issue: CDH-74982

SHOW ROLE GRANT GROUP raises exception for a group that was never granted a role

If you run the command SHOW ROLE GRANT GROUP for a group that has never been granted a role, beeline raises an exception. However, if you run the same command for a group that does not have any roles, but has at one time been granted a role, you do not get an exception, but instead get an empty list of roles granted to the group.

Workaround: Adding a role will prevent the exception.

Affected Versions:

- CDH 5.16.0
- CDH 6.0.0

Cloudera Issue: CDH-71694

GRANT/REVOKE operations could fail if there are too many concurrent requests

Under a significant workload, Grant/Revoke operations can have issues.

Workaround: If you need to make many privilege changes, plan them at a time when you do not need to do too many at once.

Affected Versions: CDH 5.13.0 and above

Apache Issue: [SENTRY-1855](#)

Cloudera Issue: CDH-56553

Creating large set of Sentry roles results in performance problems

Using more than a thousand roles/permissions might cause significant performance problems.

Workaround: Plan your roles so that groups have as few roles as possible and roles have as few permissions as possible.

Affected Versions: CDH 5.13.0 and above

Cloudera Issue: CDH-59010

Users can't track jobs with Hive and Sentry

As a prerequisite of enabling Sentry, Hive impersonation is turned off, which means all YARN jobs are submitted to the Hive job queue, and are run as the `hive` user. This is an issue because the YARN History Server now has to block users from accessing logs for their own jobs, since their own usernames are not associated with the jobs. As a result, end users cannot access any job logs unless they can get `sudo` access to the cluster as the `hdfs`, `hive` or other admin users.

In CDH 5.8 (and higher), Hive overrides the default configuration, `mapred.job.queue.name`, and places incoming jobs into the connected user's job queue, even though the submitting user remains `hive`. Hive obtains the relevant queue/username information for each job by using YARN's `fair-scheduler.xml` file.

Affected Versions: CDH 5.2.0 and above

Cloudera Issue: CDH-22890

Column-level privileges are not supported on Hive Metastore views

GRANT and REVOKE for column level privileges is not supported on Hive Metastore views.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-754](#)

SELECT privilege on all columns does not equate to SELECT privilege on table

Users who have been explicitly granted the `SELECT` privilege on all columns of a table, will *not* have the permission to perform table-level operations. For example, operations such as `SELECT COUNT (1)` or `SELECT COUNT (*)` will not work even if you have the `SELECT` privilege on all columns.

There is one exception to this. The `SELECT * FROM TABLE` command will work even if you do not have explicit table-level access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-838](#)

The `EXPLAIN SELECT` operation works without table or column-level privileges

Users are able to run the `EXPLAIN SELECT` operation, exposing metadata for all columns, even for tables/columns to which they weren't explicitly granted access.

Affected Versions: All CDH versions

Apache Issue: [SENTRY-849](#)

Object types `Server` and `URI` are not supported in `SHOW GRANT ROLE roleName on OBJECT objectName`

Workaround: Use `SHOW GRANT ROLE roleName` to list all privileges granted to the role.

Affected Versions: All CDH versions

Apache Issue: N/A

Cloudera Issue: CDH-19430

Relative URI paths not supported by Sentry

Sentry supports only absolute (not relative) URI paths in permission grants. Although some early releases (for example, CDH 5.7.0) might not have raised explicit errors when relative paths were set, upgrading a system that uses relative paths causes the system to lose Sentry permissions.

Resolution: Revoke privileges that have been set using relative paths, and grant permissions using absolute paths before upgrading.

Affected Versions: All versions. Relative paths are not supported in Sentry for permission grants.

| Absolute (Use this form) | Relative (Do not use this form) |
|------------------------------------|-----------------------------------|
| <code>hdfs://absolute/path/</code> | <code>hdfs://relative/path</code> |
| <code>s3a://bucketname/</code> | <code>s3a://bucketname</code> |

Apache Spark Known Issues

The following sections describe the current known issues and limitations in Apache Spark 2.x as distributed with CDH 6. In some cases, a feature from the upstream Apache Spark project is currently not considered reliable enough to be supported by Cloudera.

CVE-2019-10099: Apache Spark local files left unencrypted

Certain operations in Spark leave local files unencrypted on disk, even when local file encryption is enabled with `"spark.io.encryption.enabled"`.

This includes cached blocks that are fetched to disk (controlled by `spark.maxRemoteBlockSizeFetchToMem`) in the following cases:

- In SparkR when `parallelize` is used
- In Pyspark when `broadcast` and `parallelize` are used
- In Pyspark when `python udfs` is used

Products affected:

- CDH

- CDS Powered by Apache Spark

Affected versions:

- CDH 5.15.1 and earlier
- CDH 6.0.0
- CDS 2.1.0 release 1 and release 2
- CDS 2.2.0 release 1 and release 2
- CDS 2.3.0 release 3

Users affected: All users who run Spark on CDH and CDS in a multi-user environment.

Date/time of detection: July 2018

Severity (Low/Medium/High): 6.3 Medium ([CVSS AV:L/AC:H/PR:N/UI:R/S:U/C:H/I:H/A:N](#))

Impact: Unencrypted data accessible.

CVE: CVE-2019-10099

Immediate action required: Upgrade to a version of CDH containing the fix.

Workaround: Do not use of pyspark and the fetch-to-disk options.

Fixed versions:

- CDH 5.15.2
- CDH 5.16.0
- CDH 6.0.1
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 4

For the latest update on this issue see the corresponding Knowledge article: [TSB 20210-336: Apache Spark local files left unencrypted](#)

Shuffle+Repartition on a DataFrame could lead to incorrect answers

When a repartition follows a shuffle, the assignment of rows to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input rows than the original computation. As a result, some rows can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2
- CDS 2.2.0 release 1, release 2

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 3
- CDS 2.2.0 release 3
- CDS 2.3.0 release 3

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-3: Shuffle+Repartition on a DataFrame could lead to incorrect answers](#)

Shuffle+Repartition on an RDD could lead to incorrect answers

When a repartition follows a shuffle, the assignment of records to partitions is nondeterministic. If Spark has to recompute a partition, for example, due to an executor failure, the retry can consume a different set of input records than the original computation. As a result, some records can be dropped, and others can be duplicated.

Products affected: CDS Powered By Apache Spark

Affected versions:

- CDH 6.0.0, 6.0.1, 6.1.0, 6.1.1
- CDS 2.1.0 release 1, release 2, release 3
- CDS 2.2.0 release 1, release 2, release 3
- CDS 2.3.0 release 1, release 2, release 3

Fixed versions:

- CDH 6.2.0, 6.3.0
- CDS 2.1.0 release 4
- CDS 2.2.0 release 4
- CDS 2.3.0 release 4

For the latest update on this issue see the corresponding Knowledge article: [TSB 2019-337-4: Shuffle+Repartition on an RDD could lead to incorrect answers](#)

Spark Streaming jobs loop if missing Kafka topic

Spark jobs can loop endlessly if the Kafka topic is deleted while a Kafka streaming job (which uses KafkaSource) is in progress.

Workaround: Stop a job before deleting a Kafka topic.

Affected Versions: All

Cloudera Issue: CDH-57903, CDH-64513

Spark SQL does not respect size limit for the varchar type

Spark SQL treats `varchar` as a string (that is, there no size limit). The observed behavior is that Spark reads and writes these columns as regular strings; if inserted values exceed the size limit, no error will occur. The data will be truncated when read from Hive, but not when read from Spark.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Apache Issue: [SPARK-5918](#)

Cloudera Issue: CDH-33642

Spark SQL does not prevent you from writing key types not supported by Avro tables

Spark allows you to declare DataFrames with any key type. Avro supports only string keys and trying to write any other key type to an Avro table will fail.

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33648

Spark SQL does not support timestamp in Avro tables

Workaround: None

Affected Versions: CDH 5.5.0 and higher

Cloudera Issue: CDH-33649

Spark SQL does not respect Sentry ACLs when communicating with Hive metastore

Even if user is configured via Sentry to not have read permission to a Hive table, a Spark SQL job running as that user can still read the table's metadata directly from the Hive metastore. **Cloudera Issue:** CDH-76468

Dynamic allocation and Spark Streaming

If you are using Spark Streaming, Cloudera recommends that you disable dynamic allocation by setting `spark.dynamicAllocation.enabled` to `false` when running streaming applications.

Limitation with Region Pruning for HBase Tables

When SparkSQL accesses an HBase table through the HiveContext, region pruning is not performed. This limitation can result in slower performance for some SparkSQL queries against tables that use the HBase SerDes than when the same table is accessed through Impala or Hive.

Workaround: None

Affected Versions: All

Cloudera Issue: CDH-56330

Running `spark-submit` with `--principal` and `--keytab` arguments does not work in client mode

The `spark-submit` script's `--principal` and `--keytab` arguments do not work with Spark-on-YARN's `client` mode.

Workaround: Use `cluster` mode instead.

Affected Versions: All

The `--proxy-user` argument does not work in client mode

Using the `--proxy-user` argument in client mode does not work and is not supported.

Workaround: Use `cluster` mode instead.

Affected Versions: All

Long-running apps on a secure cluster might fail if driver is restarted

If you submit a long-running app on a secure cluster using the `--principal` and `--keytab` options in cluster mode, and a failure causes the driver to restart after 7 days (the default maximum HDFS delegation token lifetime), the new driver fails with an error similar to the following:

```
Exception in thread "main"  
org.apache.hadoop.ipc.RemoteException(org.apache.hadoop.security.token.SecretManager$InvalidToken):  
token <token_info> can't be found in cache
```

Workaround: None

Affected Versions: CDH 6.0

Apache Issue: [SPARK-23361](#)

Cloudera Issue: CDH-64865

History link in ResourceManager web UI broken for killed Spark applications

When a Spark application is killed, the history link in the ResourceManager web UI does not work.

Workaround: To view the history for a killed Spark application, see the Spark HistoryServer web UI instead.

Affected Versions: All CDH versions

Apache Issue: None

Cloudera Issue: CDH-49165

ORC file format is not supported

Currently, Cloudera does not support reading and writing Hive tables containing data files in the Apache ORC (Optimized Row Columnar) format from Spark applications. Cloudera recommends using Apache Parquet format for columnar data. That file format can be used with Spark, Hive, and Impala.

[Apache Sqoop Known Issues](#)

Column names cannot start with a number when importing data with the `--as-parquetfile` option.

Currently, Sqoop is using an Avro schema when writing data as a parquet file. The Avro schema requires that column names do not start with numbers, therefore Sqoop is renaming the columns in this case, prepending them with an underscore character. This can lead to issues when one wants to reuse the data in other tools, such as Impala.

Workaround: Rename the columns to comply with Avro limitations (start with letters or underscore, as specified in the [Avro documentation](#)).

Cloudera Issue: None

MySQL JDBC driver shipped with CentOS 6 systems does not work with Sqoop

CentOS 6 systems currently ship with version 5.1.17 of the MySQL JDBC driver. This version does not work correctly with Sqoop.

Workaround: Install version 5.1.31 of the JDBC driver as detailed in [Installing the JDBC Drivers for Sqoop 1](#).

Affected Versions: MySQL JDBC 5.1.17, 5.1.4, 5.3.0

Cloudera Issue: CDH-23180

MS SQL Server "integratedSecurity" option unavailable in Sqoop

The `integratedSecurity` option is not available in the Sqoop CLI.

Workaround: None

Cloudera Issue: None

Sqoop1 (doc import + `--as-parquetfile`) limitation with KMS/KTS Encryption at Rest

Due to a limitation with Kite SDK, it is not possible to use (`sqoop import --as-parquetfile`) with KMS/KTS Encryption zones. See the following example.

```
sqoop import --connect jdbc:db2://djaxludb1001:61035/DDBAT003 --username=dh810202 --P
--target-dir /data/hive_scratch/ASDISBURSEMENT --delete-target-dir -ml --query "select
disbursementnumber,disbursementdate,xmldata FROM DB2dba.ASDISBURSEMENT where
DISBURSEMENTNUMBER = 2011113210000115311 AND \${CONDITIONS}" -hive-import --hive-database
adminserver -hive-table asdisbursement_dave --map-column-java XMLDATA=String
--as-parquetfile

16/12/05 12:23:46 INFO mapreduce.Job: map 100% reduce 0%
16/12/05 12:23:46 INFO mapreduce.Job: Job job_1480530522947_0096 failed with state FAILED
due to: Job commit failed: org.kitesdk.data.DatasetIOException: Could not move contents
of
hdfs://AJAX01-ns/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096
to hdfs://AJAX01-ns/data/RetiredApps/INS/AdminServer/asdisbursement_dave
<SNIP>
Caused by: org.apache.hadoop.ipc.RemoteException(java.io.IOException):
/tmp/adminserver/.temp/job_1480530522947_0096/mr/job_1480530522947_0096/5dbcac42-5d69-4e46-88c2-17dbedac4858.parquet
can't be moved into an encryption zone.
```

Workaround: If you use the Parquet Hadoop API based implementation for importing into Parquet, specify a `--target-dir` which is the same encryption zone as the Hive warehouse directory.

If you use the Kite Dataset API based implementation, use an alternate data file type, for example text or avro.

Apache Issue: SQOOP-2943

Cloudera Issue: CDH-40826

Doc import as Parquet files may result in out-of-memory errors

Out-of-memory (OOM) errors can be caused in the following two cases:

- With many very large rows (multiple megabytes per row) before initial-page-run check (ColumnWriter)
- When rows vary significantly by size so that the next-page-size check is based on small rows and is set very high followed by many large rows

Workaround: None, other than restructuring the data.

Apache Issue: PARQUET-99

Apache ZooKeeper Known Issues

ZooKeeper JMX did not support TLS when managed by Cloudera Manager

Technical Service Bulletin 2019-310 (TSB)

The ZooKeeper service optionally exposes a JMX port used for reporting and metrics. By default, Cloudera Manager enables this port, but prior to Cloudera Manager 6.1.0, it did not support mutual TLS authentication on this connection. While JMX has a password-based authentication mechanism that Cloudera Manager enables by default, weaknesses have been found in the authentication mechanism, and Oracle now advises JMX connections to enable mutual TLS authentication in addition to password-based authentication. A successful attack may leak data, cause denial of service, or even allow arbitrary code execution on the Java process that exposes a JMX port. Beginning in Cloudera Manager 6.1.0, it is possible to configure mutual TLS authentication on ZooKeeper's JMX port.

Products affected: ZooKeeper

Releases affected: Cloudera Manager 6.1.0 and lower, Cloudera Manager 5.16 and lower

Users affected: All

Date/time of detection: June 7, 2018

Severity (Low/Medium/High): 9.8 High ([CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H](#))

Impact: Remote code execution

CVE: CVE-2018-11744

Immediate action required: Upgrade to Cloudera Manager 6.1.0 and enable TLS for the ZooKeeper JMX port by turning on the configuration settings "Enable TLS/SSL for ZooKeeper JMX" and "Enable TLS client authentication for JMX port" on the ZooKeeper service and configuring the appropriate TLS settings. Alternatively, disable the ZooKeeper JMX port via the configuration setting "Enable JMX Agent" on the ZooKeeper service.



Note: Disabling the ZooKeeper JMX port prevents Cloudera Manager from performing health checks on the ZooKeeper service.

Addressed in release/refresh/patch: Cloudera Manager 6.1.0

Cloudera Navigator 6 Data Management Release Notes



Note: For Cloudera Navigator 6 encryption component release notes, see [Cloudera Navigator 6 Encryption Release Notes](#) on page 1429.

To view release notes for the data management components of a specific Cloudera Navigator 6 release, see the following:

Cloudera Navigator 6.3.x Data Management Release Notes

To view release notes for the data management components of specific Cloudera Navigator 6.3.x releases, see the following:

[Cloudera Navigator 6.3.4 Data Management Release Notes](#)

The following topics describe new features, fixed issues, incompatible changes, and known issues for the data management components of Cloudera Navigator 6.3.4:

[New Features in Cloudera Navigator 6.3.4](#)

There are no new features in the data management components of Cloudera Navigator. See also [New Features in Cloudera Navigator 6.3.4](#) on page 1328.

Issues Fixed in Cloudera Navigator 6.3.4

The following sections describe the issues fixed in the data management components of Cloudera Navigator 6.3.4:

Navigator Metadata Server (NMS) log displays a Null Pointer Exception

In certain scenarios, the **Navigator Metadata Server (NMS)** log displays a Null Pointer Exception that occurs while processing oozie relations. The error is now handled internally by Cloudera Navigator.

Cloudera issue: NAV-7286

HDFS extraction may fail once upgrading to 6.x version

Cloudera issue: NAV-7285

Extractors can become disabled

Cloudera issue: NAV-7284

Null Pointer Exception error was seen during Spark extraction

Cloudera issue: NAV-7272

Using Postgres caused Null Pointer Exception error

Cloudera issue: NAV-7267

HTTP connections related errors

Cloudera issue: NAV-7260

Address vulnerability CVE-2019-11358

Cloudera issue: NAV-7255

NAS connectivity issues related to Cloudera Manager

Cloudera issue: NAV-7251

Audit Server fails to start up

Cloudera issue: NAV-7245

Navigator audit plugin returns uninitialized object

Cloudera issue: NAV-7186

SAML is broken in NMS

Cloudera issue: NAV-7077

Kite dataset extraction has been deprecated

Cloudera issue: NAV-6962

Known Issues in Cloudera Navigator 6.3.4

The following known issues and limitations from a previous release affect the data management components of Cloudera Navigator 6.3.4:

Authentication and Authorization

SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only
- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".

Authentication Backend Order
nav.auth.backend.order

Navigator Metadata Server Default Group ↻

- External Only
- External then Cloudera Manager
- Cloudera Manager Only
- Cloudera Manager then External

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824

Cloudera Manager Configuration

Adding a blank audit filter removes filter configuration property

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters are lost. The filter configuration property is removed from Cloudera Manager's list of configuration properties. Reverting the change in the History and Rollback does not restore the previous filters nor reproduce the filter property.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Cloudera Navigator 6.2.1, 6.3.1

Cloudera Issue: NAV-6096

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to  
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'  
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Hive, Hue, Impala

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>com.unraveldata.hadoop.hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata' ;
B = LIMIT A 16;
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]
session_timeout_s=300
query_timeout_s=300
```

- Impala timeouts
See [Setting the Idle Query and Idle Session Timeouts for impalad](#).
- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

With Oracle 12, Navigator Audit Server shows "APPARENT DEADLOCK!!!" on startup

When running on Oracle Enterprise Linux 7.6 and using Oracle 12 database, Navigator Audit Server times out when connecting to the Oracle database instance. An error message similar to the following appears in the Navigator Audit Server log:

```
2019-07-15 16:07:11,611 WARN com.mchange.v2.async.ThreadPoolAsynchronousRunner
[C3P0PooledConnectionPoolManager[identityToken->2ufazoa3lws3ap3zlw3fa|62315f22]-AdminTaskTimer]:
com.mchange.v2.async.ThreadPoolAsynchronousRunner$DeadlockDetector@1a7f383a -- APPARENT
DEADLOCK!!!
Creating emergency threads for unassigned pending tasks!
```

Workaround: Add the following entry in the Cloudera Management Service configuration option "Java Configuration Options for Navigator Audit Server":

```
-Djava.security.egd=file:///dev/urandom
```

Affects Versions: Navigator 6.2.0, 6.3.0

Fixed Versions: Navigator 6.2.1, 6.3.1

Cloudera issue: NAV-7169

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Navigator Metadata Server

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders
cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor
[CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: EndPoint1
must not be null or empty
java.lang.IllegalStateException: EndPoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
    Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537*Spark*

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.
- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|---|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:
 - Log in to Cloudera Manager Admin Console.
 - Select **Clusters > Cloudera Management Service**.
 - Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:

| Navigator Metadata Server | Navigator Metadata Server (node-1) |
|---------------------------|--|
| Storage Dir | <input type="text" value="/var/lib/cloudera-scm-navigator"/> |
| nav.data.dir | |

- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.
- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046

Cloudera Navigator 6.3.3 Data Management Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for the data management components of Cloudera Navigator 6.3.3:

New Features in Cloudera Navigator 6.3.3

The following sections describe new features for Cloudera Navigator 6.3.3:

Audit of HDFS set owner commands can include new owner name

Like all audit events, the HDFS audit event for a `setOwner` transaction records the 'Owner' as the name of the user running the command. There was no audit information to indicate the new owner of the file or directory affected. This change allows you to enable collection of the new owner name in the audit event's 'Operation' text.

To enable this change, put the following in the **NameNode Advanced Configuration Snippet (Safety Valve) for `hdfs-site.xml`**:

```
cloudera.navigator.audit.hdfs.setOwner.addTarget=true
```

With this change activated, searches in Navigator Audits or API calls with `Operation == setOwner` need to be changed to use "LIKE" instead of equal, `Operation *==* setOwner` to account for the additional metadata in the Operation text field.

Cloudera issue: NAV-7238

Issues Fixed in Cloudera Navigator 6.3.3

The following sections describe the issues fixed in the data management components of Cloudera Navigator 6.3.3:

Audit of HDFS set owner commands can include new owner name

Like all audit events, the HDFS audit event for a `setOwner` transaction records the 'Owner' as the name of the user running the command. There was no audit information to indicate the new owner of the file or directory affected. This change allows you to enable collection of the new owner name in the audit event's 'Operation' text.

To enable this change, put the following in the **NameNode Advanced Configuration Snippet (Safety Valve) for `hdfs-site.xml`**:

```
cloudera.navigator.audit.hdfs.setOwner.addTarget=true
```

With this change activated, searches in Navigator Audits or API calls with `Operation == setOwner` need to be changed to use "LIKE" instead of equal, `Operation *==* setOwner` to account for the additional metadata in the Operation text field.

Cloudera issue: NAV-7238*Navigator UI does not propagate errors from an identity provider on logout failures*

Previously, exceptions in the interaction between the Navigator web server (Jetty) and an IDP would allow errors to be sent to the Navigator user interface as a stack trace. This problem was apparent when Navigator logins were configured to use SAML and there was an error when a user logged out of Navigator. In this release, the error continues to be captured in the Navigator Metadata Server log but is not displayed in the browser.

Cloudera issue: NAV-7218*Security improvements*

This release includes security improvements for Navigator Audit Server including setting `X-Content-Type-Options "nosniff"` in the response header to prevent browsers from MIME-sniffing a response and being fooled into treating uploaded content as an executable or dynamic HTML file.

Cloudera issue: NAV-6180

Known Issues in Cloudera Navigator 6.3.3

The following known issues and limitations from a previous release affect the data management components of Cloudera Navigator 6.3.3:

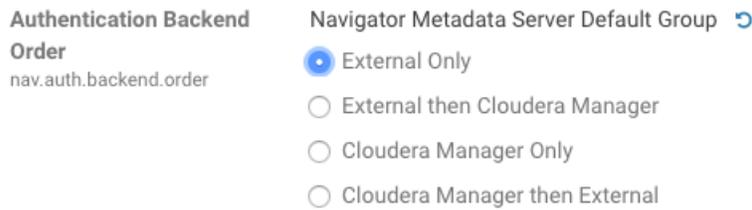
Authentication and Authorization

SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only
- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".



Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824

Cloudera Manager Configuration

Adding a blank audit filter removes filter configuration property

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters are lost. The filter configuration property is removed from Cloudera Manager's list of configuration properties. Reverting the change in the History and Rollback does not restore the previous filters nor reproduce the filter property.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Cloudera Navigator 6.2.1, 6.3.1

Cloudera Issue: NAV-6096

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Hive, Hue, Impala

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>unraveldata.com,hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata';
B = LIMIT A 16;
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]
session_timeout_s=300
query_timeout_s=300
```

- Impala timeouts

See [Setting the Idle Query and Idle Session Timeouts for impalad](#).

- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

With Oracle 12, Navigator Audit Server shows "APPARENT DEADLOCK!!!" on startup

When running on Oracle Enterprise Linux 7.6 and using Oracle 12 database, Navigator Audit Server times out when connecting to the Oracle database instance. An error message similar to the following appears in the Navigator Audit Server log:

```
2019-07-15 16:07:11,611 WARN com.mchange.v2.async.ThreadPoolAsynchronousRunner
[C3P0PooledConnectionPoolManager[identityToken->2ufazoa3lws3ap3zlw3fa|62315f22]-AdminTaskTimer]:
com.mchange.v2.async.ThreadPoolAsynchronousRunner$DeadlockDetector@1a7f383a -- APPARENT
DEADLOCK!!!
Creating emergency threads for unassigned pending tasks!
```

Workaround: Add the following entry in the Cloudera Management Service configuration option "Java Configuration Options for Navigator Audit Server":

```
-Djava.security.egd=file:///dev/urandom
```

Affects Versions: Navigator 6.2.0, 6.3.0

Fixed Versions: Navigator 6.2.1, 6.3.1

Cloudera issue: NAV-7169

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Navigator Metadata Server

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders
cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor
[CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: EndPoint1
must not be null or empty
java.lang.IllegalStateException: EndPoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537

Spark

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.
- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|---|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:
 - Log in to Cloudera Manager Admin Console.
 - Select **Clusters > Cloudera Management Service**.
 - Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:

Navigator Metadata Server (node-1)

Storage Dir
nav.data.dir

/var/lib/cloudera-scm-navigator

- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.

- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046

Cloudera Navigator 6.3.1 Data Management Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for the data management components of Cloudera Navigator 6.3.1:

New Features in Cloudera Navigator 6.3.1

There are no new features in the data management components of Cloudera Navigator. See also [Known Issues in Cloudera Navigator 6.3.1](#) on page 1345.

Issues Fixed in Cloudera Navigator 6.3.1

The following sections describe the issues fixed in the data management components of Cloudera Navigator 6.3.1:

Audit Event Filter configuration disappeared from Cloudera Manager if an empty rule is added

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters were lost. The filter configuration property was removed from Cloudera Manager's list of configuration properties.

Cloudera issue: NAV-6096

With Oracle 12, Navigator Audit Server showed "APPARENT DEADLOCK!!!" on startup

When running on Oracle Enterprise Linux 7.6 and using Oracle 12 database, Navigator Audit Server timed out when connecting to the Oracle database instance. An error message similar to the following appeared in the Navigator Audit Server log:

```
2019-07-15 16:07:11,611 WARN com.mchange.v2.async.ThreadPoolAsynchronousRunner
[C3P0PooledConnectionPoolManager[identityToken->2ufazoa3lws3ap3zbw3fa|62315f22]-AdminTaskTimer]:
com.mchange.v2.async.ThreadPoolAsynchronousRunner$DeadlockDetector@1a7f383a -- APPARENT
DEADLOCK!!!
Creating emergency threads for unassigned pending tasks!
```

Cloudera issue: NAV-7169

Known Issues in Cloudera Navigator 6.3.1

The following known issues and limitations from a previous release affect the data management components of Cloudera Navigator 6.3.1:

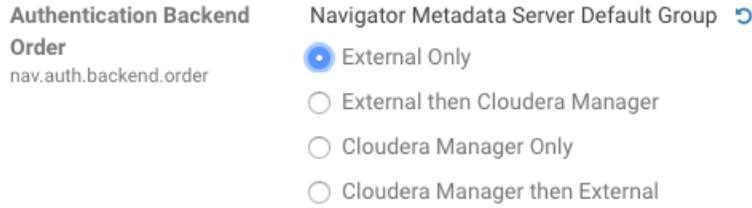
Authentication and Authorization

SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only
- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".



Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824

Cloudera Manager Configuration

Adding a blank audit filter removes filter configuration property

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters are lost. The filter configuration property is removed from Cloudera Manager's list of configuration properties. Reverting the change in the History and Rollback does not restore the previous filters nor reproduce the filter property.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Cloudera Navigator 6.2.1, 6.3.1

Cloudera Issue: NAV-6096

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Hive, Hue, Impala

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>com.unraveldata.hadoop.hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata' ;
B = LIMIT A 16;
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
```

```
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using  
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]  
session_timeout_s=300  
query_timeout_s=300
```

- Impala timeouts
See [Setting the Idle Query and Idle Session Timeouts for impalad](#).
- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

With Oracle 12, Navigator Audit Server shows "APPARENT DEADLOCK!!!" on startup

When running on Oracle Enterprise Linux 7.6 and using Oracle 12 database, Navigator Audit Server times out when connecting to the Oracle database instance. An error message similar to the following appears in the Navigator Audit Server log:

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[C3P0PooledConnectionPoolManager[identityToken->2ufazoa3lws3ap3zlw3fa|62315f22]-AdminTaskTimer]:
com.mchange.v2.async.ThreadPoolAsynchronousRunner$DeadlockDetector@1a7f383a -- APPARENT
DEADLOCK!!!
Creating emergency threads for unassigned pending tasks!
```

Workaround: Add the following entry in the Cloudera Management Service configuration option "Java Configuration Options for Navigator Audit Server":

```
-Djava.security.egd=file:///dev/urandom
```

Affects Versions: Navigator 6.2.0, 6.3.0

Fixed Versions: Navigator 6.2.1, 6.3.1

Cloudera issue: NAV-7169

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Navigator Metadata Server

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders
cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor
[CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: EndPoint1
must not be null or empty
java.lang.IllegalStateException: EndPoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
    Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537*Spark*

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.
- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|---|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:
 - Log in to Cloudera Manager Admin Console.
 - Select **Clusters > Cloudera Management Service**.
 - Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:

| Navigator Metadata Server | Navigator Metadata Server (node-1) |
|---------------------------|--|
| Storage Dir | <input type="text" value="/var/lib/cloudera-scm-navigator"/> |
| nav.data.dir | |

- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.
- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046**Cloudera Navigator 6.3.0 Data Management Release Notes**

The following topics describe new features, fixed issues, incompatible changes, and known issues for the data management components of Cloudera Navigator 6.3.0:

New Features in Cloudera Navigator 6.3.0

The following sections describe what's new and what has changed in the data management components of Cloudera Navigator 6.3.0:

Auditing in Virtual Private Clusters

Navigator now extracts audit events from supported services running on Compute clusters in addition to collecting audit events from shared services in the data context. No lineage or metadata is extracted from services running on Compute clusters. The new behavior is described in detail in [Virtual Private Clusters and Cloudera SDX](#).

Note that audit events need time to be communicated from the hosts on the Compute cluster to Navigator on the Base cluster. Consider giving some time between running the final audited events on the Compute cluster and when terminating the cluster to ensure that the audits have been delivered to Navigator. There are no safe-guards to ensure all audits are collected before terminating the cluster.

Issues Fixed in Cloudera Navigator 6.3.0

The following sections describe the issues fixed in the data management components of Cloudera Navigator 6.3.0:

Navigator Audit Server can fill temporary tablespace on Oracle

Navigator Audit Server sorts data when querying the backing database for audit information. When the backing database is Oracle, each query uses temporary tablespaces, which is cleared only when Navigator closes connections to the database. Over time Navigator queries can use up all of the temporary tablespace causing queries to fail.

This release includes a new configuration property `maxConnectionAge` that is set to one day (86400 seconds). If you continue to see that Navigator Audit Server is holding temp tablespace for too long for your Oracle database resources, you can adjust the setting to have Navigator Audit Server release the connections more frequently. Change the value in the **Navigator Audit Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** as follows:

```
navigator.max.connection.age=number of seconds
```

Note that if you have used **Java Configuration Options for Navigator Audit Server** to set the value of `maxConnectionAge`, that setting will no longer work.

This setting applies only to Navigator Audit Server with an Oracle backing database; it does not apply to other database types.

Cloudera Issue: NAV-7159*Error blocked second audit streaming target*

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Cloudera Issue: NAV-7143*Navigator 6.2.0 did not start in environment without Internet connectivity*

Navigator Metadata Server version 6.2 was unable to start if the host where it is installed did not have access to the Internet. This problem is fixed in this release.

Cloudera issue: NAV-7115*Apache Commons File Upload Vulnerability*

The `commons-fileupload` package used by Navigator has been upgraded to 1.3.3 to resolve a security vulnerability indicated by [CVE-2016-3092](#).

Cloudera issue: NAV-7099

Support for Compute-Only Clusters

Navigator support for Compute-only clusters in Cloudera Manager includes audit from services on the Base cluster and Compute clusters. No metadata is extracted from services running on the Compute cluster.

For more information, see [Auditing in Virtual Private Clusters](#) on page 1353.

Cloudera Issue: NAV-7091

Navigator Metadata Server purge jobs may not run if there were policies configured

Navigator Metadata Server purge could produce messages such as "Checking if maintenance is running" and then failed to run during the available window. This problem occurred when a scheduled purge job waits for extraction tasks to finish but while waiting, a policy job starts, preventing the purge job from running. In this release, policy jobs are not be triggered if purge jobs are scheduled and waiting to start.

Cloudera issue: NAV-7037

Navigator Metadata Server shows many duplicate lineage relations

Under some circumstances, Navigator Metadata Server created invalid operation to operation execution relations. This caused errors when displaying the lineage in the Navigator console. Also, the metadata purge could not delete the invalid relations. This problem is fixed in this release.

Cloudera Issue: NAV-7035

International characters in tag names

Navigator tags now support UNICODE characters beyond ASCII. Only ASCII text can be used in the name of a user-defined or managed property. Property values can include international characters.

Cloudera Issue: NAV-7011

Reduction in the amount of memory used by Navigator Metadata Server

This release includes changes that improve how Navigator Metadata Server uses memory, reducing the overall heap required.

Cloudera Issue: NAV-6958

Navigator Metadata Server would not start if a truststore password was not set

If a truststore password is not set, Navigator Metadata Server would not start. Cloudera Manager showed the status of "Role failed to start due to error null." This problem is resolved in this release: if TLS is enabled, Navigator Metadata Server has the same behavior as other Cloudera Manager-managed services and will start without a truststore password.

Cloudera issue: NAV-6829

Navigator Audit Server "CannotSendRequest" error resolved

When an error occurred in the audit pipeline, it was possible that not all components in the Navigator Audit Server recovered fully. One symptom of such a failure is the "CannotSendRequest" error in the Navigator Audit Server log. This problem is fixed in this release.

Cloudera issue: NAV-6321

Known Issues in Cloudera Navigator 6.3.0

The following known issues and limitations from a previous release affect the data management components of Cloudera Navigator 6.3.0:

Authentication and Authorization

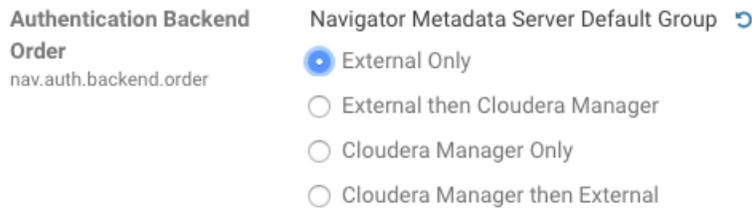
SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only

- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".



Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824

Cloudera Manager Configuration

Adding a blank audit filter removes filter configuration property

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters are lost. The filter configuration property is removed from Cloudera Manager's list of configuration properties. Reverting the change in the History and Rollback does not restore the previous filters nor reproduce the filter property.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Cloudera Navigator 6.2.1, 6.3.1

Cloudera Issue: NAV-6096

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Hive, Hue, Impala

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>unraveldata.com,hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata';
B = LIMIT A 16;
```

```
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]
session_timeout_s=300
query_timeout_s=300
```

- Impala timeouts

See [Setting the Idle Query and Idle Session Timeouts for impalad](#).

- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

With Oracle 12, Navigator Audit Server shows "APPARENT DEADLOCK!!!" on startup

When running on Oracle Enterprise Linux 7.6 and using Oracle 12 database, Navigator Audit Server times out when connecting to the Oracle database instance. An error message similar to the following appears in the Navigator Audit Server log:

```
2019-07-15 16:07:11,611 WARN com.mchange.v2.async.ThreadPoolAsynchronousRunner
[C3P0PooledConnectionPoolManager[identityToken->2ufazoa3lws3ap3zlw3fa|62315f22]-AdminTaskTimer]:
com.mchange.v2.async.ThreadPoolAsynchronousRunner$DeadlockDetector@1a7f383a -- APPARENT
DEADLOCK!!!
Creating emergency threads for unassigned pending tasks!
```

Workaround: Add the following entry in the Cloudera Management Service configuration option "Java Configuration Options for Navigator Audit Server":

```
-Djava.security.egd=file:///dev/urandom
```

Affects Versions: Navigator 6.2.0, 6.3.0

Fixed Versions: Navigator 6.2.1, 6.3.1

Cloudera issue: NAV-7169

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Navigator Metadata Server

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders
cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor
[CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: EndPoint1
must not be null or empty
java.lang.IllegalStateException: EndPoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537

Spark

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.
- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|---|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:
 - Log in to Cloudera Manager Admin Console.
 - Select **Clusters > Cloudera Management Service**.
 - Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:

Navigator Metadata Server (node-1)

Storage Dir
nav.data.dir

/var/lib/cloudera-scm-navigator

- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.

- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046

Cloudera Navigator 6.2.x Data Management Release Notes

To view release notes for the data management components of specific Cloudera Navigator 6.2.x releases, see the following:

Cloudera Navigator 6.2.1 Data Management Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for the data management components of Cloudera Navigator 6.2.1:

New Features in Cloudera Navigator 6.2.1

Audits for HBase Grants include additional detail

Additional audit detail is captured for HBase GRANT events including the grantee username and the permissions granted. The new information is added to the `operation` field in the audit information. The operation text now shows `grant:username>:access_permissions`. For example, `grant:auser:RWX`.

For more information about HBase command auditing, see [Auditing HBase Authorization Grants](#) and [Navigator Audits: Operations by Component](#).

Issues Fixed in Cloudera Navigator 6.2.1

The following sections describe the issues fixed in the data management components of Cloudera Navigator 6.2.1:

Audits for HBase Grants include additional detail

Additional audit detail is captured for HBase GRANT events including the grantee username and the permissions granted. The new information is added to the `operation` field in the audit information. The operation text now shows `grant:username>:access_permissions`. For example, `grant:auser:RWX`.

For more information about HBase command auditing, see [Auditing HBase Authorization Grants](#) and [Navigator Audits: Operations by Component](#).

Cloudera issue: CDH-63957

With Oracle 12, Navigator Audit Server showed "APPARENT DEADLOCK!!!" on startup

When running on Oracle Enterprise Linux 7.6 and using Oracle 12 database, Navigator Audit Server timed out when connecting to the Oracle database instance. An error message similar to the following appeared in the Navigator Audit Server log:

```
2019-07-15 16:07:11,611 WARN com.mchange.v2.async.ThreadPoolAsynchronousRunner
[C3P0PooledConnectionPoolManager[identityToken->2ufazoa31ws3ap3zbw3fa|62315f22]-AdminTaskTimer]:
com.mchange.v2.async.ThreadPoolAsynchronousRunner$DeadlockDetector@1a7f383a -- APPARENT
DEADLOCK!!!
Creating emergency threads for unassigned pending tasks!
```

Cloudera issue: NAV-7169

Navigator Audit Server can fill temporary tablespace on Oracle

Navigator Audit Server sorts data when querying the backing database for audit information. When the backing database is Oracle, each query uses temporary tablespaces, which is cleared only when Navigator closes connections to the database. Over time Navigator queries can use up all of the temporary tablespace causing queries to fail.

This release includes a new configuration property `maxConnectionAge` that is set to one day (86400 seconds). If you continue to see that Navigator Audit Server is holding temp tablespace for too long for your Oracle database resources, you can adjust the setting to have Navigator Audit Server release the connections more frequently. Change the value in the **Navigator Audit Server Advanced Configuration Snippet (Safety Valve) for `cloudera-navigator.properties`** as follows:

```
navigator.max.connection.age=number of seconds
```

Note that if you have used **Java Configuration Options for Navigator Audit Server** to set the value of `maxConnectionAge`, that setting will no longer work.

This setting applies only to Navigator Audit Server with an Oracle backing database; it does not apply to other database types.

Cloudera Issue: NAV-7159

Error blocked second audit streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Cloudera Issue: NAV-7143

Navigator 6.2.0 did not start in environment without Internet connectivity

Navigator Metadata Server version 6.2 was unable to start if the host where it is installed did not have access to the Internet. This problem is fixed in this release.

Cloudera issue: NAV-7115

Apache Commons File Upload Vulnerability

The `commons-fileupload` package used by Navigator has been upgraded to 1.3.3 to resolve a security vulnerability indicated by [CVE-2016-3092](#).

Cloudera issue: NAV-7099

Navigator Metadata Server shows many duplicate lineage relations

Under some circumstances, Navigator Metadata Server created invalid operation to operation execution relations. This caused errors when displaying the lineage in the Navigator console. Also, the metadata purge could not delete the invalid relations. This problem is fixed in this release.

Cloudera Issue: NAV-7035

Navigator Metadata Server would not start if a truststore password was not set

If a truststore password is not set, Navigator Metadata Server would not start. Cloudera Manager showed the status of "Role failed to start due to error null." This problem is resolved in this release: if TLS is enabled, Navigator Metadata Server has the same behavior as other Cloudera Manager-managed services and will start without a truststore password.

Cloudera issue: NAV-6829

Audit Event Filter configuration disappeared from Cloudera Manager if an empty rule is added

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters were lost. The filter configuration property was removed from Cloudera Manager's list of configuration properties.

Cloudera issue: NAV-6096

Known Issues in Cloudera Navigator 6.2.1

The following known issues and limitations from a previous release affect the data management components of Cloudera Navigator 6.2.1:

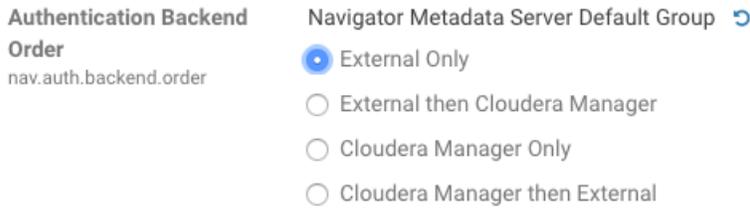
Authentication and Authorization

SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only
- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".



Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824

Cloudera Manager Configuration

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!-- 'hive.exec.post.hooks', originally set to  
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'  
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Hive, Hue, Impala

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>com.unraveldata.hadoop.hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata' ;
B = LIMIT A 16;
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
```

```
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]
session_timeout_s=300
query_timeout_s=300
```

- Impala timeouts
See [Setting the Idle Query and Idle Session Timeouts for impalad](#).
- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Navigator Metadata Server

Navigator 6.2.0 doesn't start in environment without Internet connectivity

Navigator Metadata Server version 6.2 is unable to start if the host where it is installed does not have access to the Internet. The log contains the following error:

```
java.net.UnknownHostException: java.sun.com
```

Avoid upgrading to Cloudera Manager version 6.2.0 if Navigator is running in a closed-network environment.

Workaround: It's possible to update `/etc/hosts` to point to an internal alternative `java.sun.com` web server instance. In that location, provide the Java `web-app_2_3.dtd` file that Navigator looks for.

Affects Versions: Navigator 6.2.0

Fixed Versions: Navigator 6.3.0, 6.2.1

Cloudera issue: NAV-7115

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor [CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: EndPoint1 must not be null or empty
java.lang.IllegalStateException: EndPoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
    Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537

Spark

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.
- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|---|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted

entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:
 - Log in to Cloudera Manager Admin Console.
 - Select **Clusters > Cloudera Management Service**.
 - Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:

| Navigator Metadata Server | Navigator Metadata Server (node-1) |
|---------------------------|--|
| Storage Dir | <input type="text" value="/var/lib/cloudera-scm-navigator"/> |
| nav.data.dir | |

- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.
- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046

Cloudera Navigator 6.2.0 Data Management Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for the data management components of Cloudera Navigator 6.2.0:

New Features in Cloudera Navigator 6.2.0

The following sections describe what's new and what has changed in the data management components of Cloudera Navigator 6.2.0:

Virtual Private Cluster Support

Navigator continues to support audit and metadata extraction from services on the base cluster in an environment running both base and compute clusters. However, no audit events or metadata are extracted from services running on compute clusters. You can expect the following behavior for services included in a data context:

- **HDFS, S3, ADLS.** HDFS audits and metadata changes that affect file system directories and files are collected in Navigator. Operations and operation executions that are performed on the compute cluster against HDFS entities are not collected. This means Navigator will show the HDFS entities, but if operations are performed against them from the compute cluster, Navigator will not include metadata for the operation execution or lineage from the HDFS entity to any input or output.
- **Hive.** HMS audits and metadata changes that describe Hive databases, tables, views, partitions, and columns are collected in Navigator. Operations and operation executions performed by HiveServer2, Impala, and SparkSQL on the compute cluster against Hive entities are not collected. For example, if a user runs a SELECT against a table from the compute cluster, a SELECT event is not collected; if a user creates a table and loads data into it on the compute cluster, Navigator will create an entity for the table when extracting metadata from HMS on the base cluster. It will not include metadata for the create operation or create lineage to indicate the source of data for the table.
- **Sentry.** Services that check user access against Sentry policies have the same behavior on the compute cluster as on the base cluster. However, Navigator will not collect audits for when services on the compute cluster check Sentry policies for data access. For example, when a user performs a SELECT against a table from the compute cluster and the user does not have access to the table or one or more columns, the denied access event would be created by the service on the compute cluster and is therefore not collected. If the same actions occur on the base cluster, the Navigator audits will include the events.

To summarize, Navigator does collect audit events and extract metadata from shared services in the data context. Navigator does not collect audits from services running on compute clusters. Navigator does not extract metadata for services running on compute clusters. For more information, see [Virtual Private Clusters and Cloudera SDX](#).

Deterministic Metadata Purge Operation

In this release, the metadata purge operation has a high priority relative to other Navigator Metadata Server tasks. When a purge operation runs, it first stops any other Navigator Metadata Server tasks. After the purge completes (or reaches the time limit for when it can run), it reschedules the extraction tasks that were stopped. This behavior applies to metadata clean up jobs scheduled in the Navigator console (**Administration > Purge Settings**) or through the Navigator API and to jobs to clear deleted managed metadata properties (**Administration > Managed Properties > Purge deleted Properties**). Note that policy tasks interrupted by a purge operation are not restarted.

For more information, see [Best Practices for Clearing Metadata using Purge](#).

Bulk Metadata Update API

This release provides a bulk interface for updating Navigator entity metadata. Use the `PUT /entities/bulk/` API to update metadata for many entities in the same call. This API is faster than the single `PUT` API because it uses a single HTTP request to apply the metadata rather than an HTTP request for each entity.

For more information see the interactive API documentation available from the Help menu in the Navigator console or [Updating Metadata for Entities in Bulk: PUT /entities/bulk](#).

File size reporting support

This release includes Navigator support for file size reporting with the goal of identifying potential performance problems stemming from data stored inefficiently. Navigator collects file size metadata and saves it in HDFS. Telemetry Publisher gets the metadata from HDFS and sends it to Cloudera Workload Experience Manager (WXM).

Not supported for secure clusters.

Enable this feature in Cloudera Manager with Cloudera Management Service properties for "Small Files Reporting:"

Small Files Reporting: Enable Data Collection Cloudera Management Service (Service-Wide) ↻

Small Files Reporting: HDFS Service for Data Staging Cloudera Management Service (Service-Wide) ↻
nav.smallfiles.hdfs.staging.service.name HDFS-1 none

Small Files Reporting: HDFS Staging Location Cloudera Management Service (Service-Wide)
nav.smallfiles.hdfs.staging.root.path

Restart Navigator Metadata Server after enabling data collection for small files reporting.

For more information, see [File Size Reporting](#) in the Workload Experience Manager documentation.

Metadata for Hive columns now includes the column number

The technical metadata for Hive table columns now includes the ordinal position for the columns as "Field Index", the index starting at zero. You can include "Field Index" as a search facet for Hive columns or specify "fieldIndex" in a metadata search query. In addition, columns are ordered by their field index when listed in the table metadata.

For new installations, this additional metadata appears as metadata for Hive assets are extracted. For upgraded installations, the additional metadata must be re-extracted from Hive assets that are already in Navigator; you may not see the field index values immediately after the upgrade.

Issues Fixed in Cloudera Navigator 6.2.0

The following sections describe the issues fixed in the data management components of Cloudera Navigator 6.2.0:

Navigator Metadata Server purge jobs might not run if there were policies configured

Navigator Metadata Server purge could produce messages such as "Checking if maintenance is running" and then failed to run during the available window. This problem occurred when a scheduled purge job waits for extraction tasks to finish but while waiting, a policy job starts, preventing the purge job from running. In this release, policy jobs will not be triggered if purge jobs are scheduled and waiting to start.

Cloudera Issue: NAV-7037

Support for Compute-Only Clusters

Navigator support for compute-only clusters in Cloudera Manager includes audit and metadata extraction from services on the base cluster. No audit events or metadata are extracted from services running on the compute cluster.

For more information, see [Virtual Private Cluster Support](#) on page 1371.

Cloudera Issue: NAV-7028

International characters in tag names

Navigator tags now support UNICODE characters beyond ASCII. Only ASCII text can be used in the name of a user-defined or managed property. Property values can include international characters.

Cloudera Issue: NAV-7011

Bulk update API

This release provides a bulk interface for updating Navigator entity metadata. Use the `PUT /entities/bulk/` API to update metadata for many entities in the same call. This API is faster than the single `PUT` API because it uses a single HTTP request to apply the metadata rather than an HTTP request for each entity.

For more information see the interactive API documentation available from the Help menu in the Navigator console or [Updating Metadata for Entities in Bulk: PUT /entities/bulk](#).

Security vulnerabilities addressed for Thrift

The Apache Thrift client used by Navigator has been upgraded to 0.12.0 to resolve a security vulnerability indicated by [CVE-2018-1320](#).

Cloudera Issue: NAV-6998

Metadata purge priority over other tasks

This release changes the behavior of the metadata purge operation. When the scheduled purge operation starts, Navigator Metadata Server stops any running extraction and policy tasks so that the purge operation can start immediately. The extraction tasks are automatically rescheduled when the purge completes; the policy tasks are not.

For more information, see [Best Practices for Clearing Metadata using Purge](#).

Cloudera Issue: NAV-6959

Reduction in the amount of memory used by Navigator Metadata Server

This release includes changes that improve how Navigator Metadata Server uses memory, reducing the overall heap required.

Cloudera Issue: NAV-6958

Console display of purge history was not sorted

The Navigator console content showing the history of purge jobs is now sorted by time in descending order.

Cloudera Issue: NAV-6916

Security vulnerabilities addressed for Jetty

The Eclipse Jetty web server used by Navigator has been upgraded to 9.4.11 to resolve security vulnerabilities indicated by: [CVE-2015-2080](#), [CVE-2016-4800](#), [CVE-2017-7657](#), [CVE-2017-7658](#), and [CVE-2017-9735](#).

Cloudera Issue: NAV-6901, NAV-6865

Lineage input and output count corrected

Lineage output counts were not displayed correctly when an entity is both an input and output for the current entity. Both the input and output counts are off by one.

In this release, the input and output counts include all leaf nodes that are not operations and not marked deleted.

Cloudera Issue: NAV-6892

Index added to Hive column metadata

The technical metadata for Hive columns now includes the ordinal position of the column as "Field Index", where the index starts at zero. Columns are now listed by their field index when shown in the parent table or view details. Previously, there was no specific order. The additional metadata for existing Hive column entities must be extracted from the Hive sources, so you will not see it immediately after upgrading.

Cloudera Issue: NAV-6815

Navigator didn't recognize local files in Spark jobs

Spark jobs can use files on the local filesystem as job inputs or outputs. Navigator only supported HFDS, Hive, and S3 assets as job inputs or outputs. As of this release, Navigator now handles local source types when extracting metadata from Spark jobs.

Cloudera Issue: NAV-6811

File size reporting support

This release includes Navigator support for file size reporting with the goal of identifying potential performance problems stemming from data stored inefficiently. Navigator collects file size metadata and saves it in HDFS. Telemetry Publisher gets the metadata from HDFS and sends it to Cloudera Workload Experience Manager (WXM).

Not supported for secure clusters.

Enable this feature in Cloudera Manager with Cloudera Management Service properties for "Small Files Reporting:"

| | |
|---|--|
| <p>Small Files Reporting: Enable Data Collection</p> | <p><input checked="" type="checkbox"/> Cloudera Management Service (Service-Wide) ↻</p> |
| <p>Small Files Reporting: HDFS Service for Data Staging nav.smallfiles.hdfs.staging.service.name</p> | <p>Cloudera Management Service (Service-Wide) ↻</p> <p><input checked="" type="radio"/> HDFS-1</p> <p><input type="radio"/> none</p> |
| <p>Small Files Reporting: HDFS Staging Location nav.smallfiles.hdfs.staging.root.path</p> | <p>Cloudera Management Service (Service-Wide)</p> <div style="border: 1px solid #ccc; padding: 2px; width: fit-content;"> /user/cloudera/navigator/smallfiles </div> |

Restart Navigator Metadata Server after enabling data collection for small files reporting.

For more information, see [File Size Reporting](#) in the Workload Experience Manager documentation.

Cloudera Issue: NAV-6572

Swagger interactive documentation fixed for GET /audits API

The Navigator API interactive documentation for GET /audits had the wrong selector name for databases. The reference to database_name is now correct.

To explore the Swagger interactive API interface, open **API Documentation** from the help menu in the Navigator console.

Cloudera Issue: NAV-6411

Kite Datasets support deprecated

Kite Dataset API was deprecated for Cloudera Manager in 6.0.0. Navigator support for metadata extraction from Kite Datasets is now deprecated and will be removed in a future release. To avoid log messages indicating Kite Dataset issues, you can disable Kite extraction using a Cloudera Manager safety valve. Set the following in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties**:

```
nav.extractor.hdfs.datasets.enabled
```

Cloudera Issue: NAV-6368

Navigator Audit Server "CannotSendRequest" error resolved

When an error occurred in the audit pipeline, it was possible that not all components in the Navigator Audit Server recovered fully. One symptom of such a failure is the "CannotSendRequest" error in the Navigator Audit Server log. This problem is fixed in this release.

Cloudera Issue: NAV-6321

Corrected exception produced during S3 extraction

Enabling or disabling S3 extraction caused a null pointer exception (NPE) indicating that some of the information needed was null. The error did not affect the S3 extraction functionality. This release improves the interchange to avoid the error.

Cloudera Issue: NAV-6246

Known Issues in Cloudera Navigator 6.2.0

The following known issues and limitations from a previous release affect the data management components of Cloudera Navigator 6.2.0:

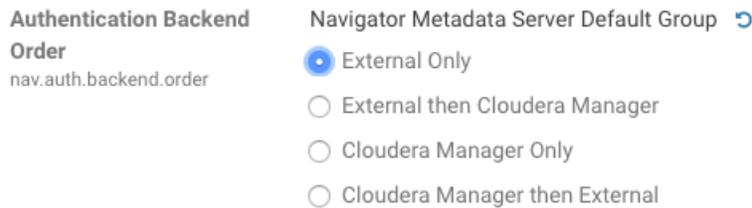
Authentication and Authorization

SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only
- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".



Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824*Cloudera Manager Configuration*

Adding a blank audit filter removes filter configuration property

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters are lost. The filter configuration property is removed from Cloudera Manager's list of configuration properties. Reverting the change in the History and Rollback does not restore the previous filters nor reproduce the filter property.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Cloudera Navigator 6.2.1, 6.3.1

Cloudera Issue: NAV-6096

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Hive, Hue, Impala

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>unraveldata.com,hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata';
B = LIMIT A 16;
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]
session_timeout_s=300
query_timeout_s=300
```

- Impala timeouts

See [Setting the Idle Query and Idle Session Timeouts for impalad](#).

- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

With Oracle 12, Navigator Audit Server shows "APPARENT DEADLOCK!!!" on startup

When running on Oracle Enterprise Linux 7.6 and using Oracle 12 database, Navigator Audit Server times out when connecting to the Oracle database instance. An error message similar to the following appears in the Navigator Audit Server log:

```
2019-07-15 16:07:11,611 WARN com.mchange.v2.async.ThreadPoolAsynchronousRunner
[C3P0PooledConnectionPoolManager[identityToken->2ufazoa3lws3ap3zlw3fa|62315f22]-AdminTaskTimer]:
com.mchange.v2.async.ThreadPoolAsynchronousRunner$DeadlockDetector@1a7f383a -- APPARENT
DEADLOCK!!!
Creating emergency threads for unassigned pending tasks!
```

Workaround: Add the following entry in the Cloudera Management Service configuration option "Java Configuration Options for Navigator Audit Server":

```
-Djava.security.egd=file:///dev/urandom
```

Affects Versions: Navigator 6.2.0, 6.3.0

Fixed Versions: Navigator 6.2.1, 6.3.1

Cloudera issue: NAV-7169

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Navigator Metadata Server

Navigator 6.2.0 doesn't start in environment without Internet connectivity

Navigator Metadata Server version 6.2 is unable to start if the host where it is installed does not have access to the Internet. The log contains the following error:

```
java.net.UnknownHostException: java.sun.com
```

Avoid upgrading to Cloudera Manager version 6.2.0 if Navigator is running in a closed-network environment.

Workaround: It's possible to update `/etc/hosts` to point to an internal alternative `java.sun.com` web server instance. In that location, provide the Java `web-app_2_3.dtd` file that Navigator looks for.

Affects Versions: Navigator 6.2.0

Fixed Versions: Navigator 6.3.0, 6.2.1

Cloudera issue: NAV-7115

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders
cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor
[CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: EndPoint1
must not be null or empty
java.lang.IllegalStateException: EndPoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537

Spark

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.
- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Navigator 6.2.0 doesn't start in environment without Internet connectivity

Navigator Metadata Server version 6.2 is unable to start if the host where it is installed does not have access to the Internet. The log contains the following error:

```
java.net.UnknownHostException: java.sun.com
```

Avoid upgrading to Cloudera Manager version 6.2.0 if Navigator is running in a closed-network environment.

Workaround: It's possible to update `/etc/hosts` to point to an internal alternative `java.sun.com` web server instance. In that location, provide the Java `web-app_2_3.dtd` file that Navigator looks for.

Affects Versions: Navigator 6.2.0

Fixed Versions: Navigator 6.3.0, 6.2.1

Cloudera issue: NAV-7115

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|---|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

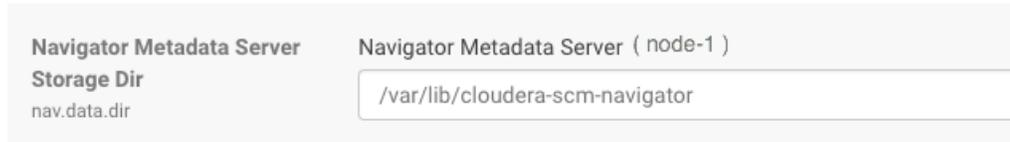
Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:

- Log in to Cloudera Manager Admin Console.
- Select **Clusters > Cloudera Management Service**.
- Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:



- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.
- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046

Cloudera Navigator 6.1.x Data Management Release Notes

To view release notes for the data management components of specific Cloudera Navigator 6.1.x releases, see the following:

Cloudera Navigator 6.1.1 Release Notes

The following topics describe new features (none), fixed issues, and known issues for the data management components of Cloudera Navigator 6.1.1:

New Features in Cloudera Navigator 6.1.1

There are no new features in the data management components of Cloudera Navigator. See also [Known Issues in Cloudera Navigator 6.1.1](#) on page 1383.

Issues Fixed in Cloudera Navigator 6.1.1

The following sections describe the issues fixed in the data management components of Cloudera Navigator 6.1.1:

Correction to lineage input and output counts

Lineage output counts were not displayed correctly in the Navigator console when an entity was both an input and output for the current entity. Both the input and output counts were off by one.

In this release, the input and output counts include all leaf nodes that are not operations and are not marked deleted.

Cloudera Issue: NAV-6892

Duplicate data flow relations after Sqoop operation

After using Sqoop to transfer data to HDFS, Navigator Metadata Server may have duplicated relations between YARN operation execution entities and HDFS directory entities. This issue is fixed in this release.

Cloudera Issue: NAV-6446

Corrected exception produced during S3 extraction

Enabling or disabling S3 extraction caused a null pointer exception (NPE) indicating that some of the information needed was null. The error did not affect the S3 extraction functionality. This release improves the interchange to avoid the error.

Cloudera Issue: NAV-6246

Known Issues in Cloudera Navigator 6.1.1

The following known issues and limitations from a previous release affect the data management components of Cloudera Navigator 6.1.1:

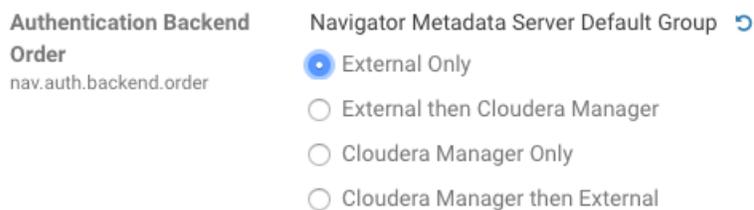
Authentication and Authorization

SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only
- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".



Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824

Cloudera Manager Configuration

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Hive, Hue, Impala

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>com.unraveldata.hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata';
B = LIMIT A 16;
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]
session_timeout_s=300
query_timeout_s=300
```

- Impala timeouts
See [Setting the Idle Query and Idle Session Timeouts for impalad](#).

- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Navigator Metadata Server

International characters not supported in tags or property names

Navigator tags and the key portion of user-defined and managed properties do not support UNICODE characters beyond ASCII. Only ASCII text can be used in the text of a tag or the name of a property. Property values can include international characters.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Tags are fixed in Cloudera Navigator 6.2.0

Cloudera Issue: NAV-7011, NAV-7044

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor
[CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: EndPoint1
must not be null or empty
java.lang.IllegalStateException: EndPoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

Navigator Metadata Server purge jobs may not run if there are policies configured

Navigator Metadata Server purge can produce messages such as "Checking if maintenance is running" and then fail to run during the available window. This problem occurs when a scheduled purge job waits for extraction tasks to finish but while waiting, a policy job starts, preventing the purge job from running.

Workaround: Specifically, to stop policies from running when you are trying to ensure that purge jobs will run, you can delete policies or temporarily change them to run infrequently to give the purge job time to run. When purge jobs have caught up to their backlog of work, you can change the policies back to running more frequently. Note that simply disabling the policies is not sufficient.

More generally, if you find that scheduled purge jobs are not running because there are other Navigator tasks in progress, consider stopping Navigator extractors and setting policies to run much less frequently. Then manually run the metadata purge using an API call to match your Navigator version:

```
curl -X POST -u user:password
"https://navigator_host:7187/api/vXX/maintenance/purge?deleteTimeThresholdMinutes=duration"
```

API versions correspond to Navigator versions as described [Mapping API Versions to Product Versions](#).

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed Versions: Cloudera Navigator 6.2.0

Cloudera Issue: NAV-7037

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
    Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537

Spark

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.
- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Navigator doesn't recognize local files in Spark jobs

Spark jobs can use files on the local filesystem as job inputs or outputs. Navigator, however, only supports HFDS, Hive, and S3 assets as job inputs or outputs. When Navigator extracts metadata from Spark and encounters a local source type, the metadata is discarded and the following error appears in the Navigator Metadata Server log:

```
2018-10-11 12:14:26,192 WARN com.cloudera.nav.api.ApiExceptionMapper
[qtp1574898980-23815]: Unexpected exception.
    java.lang.RuntimeException: Source LOCAL isn't supported for Spark Lineage
```

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed Versions: Cloudera Navigator 6.2.0

Cloudera Issue: NAV-6811

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|---|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded

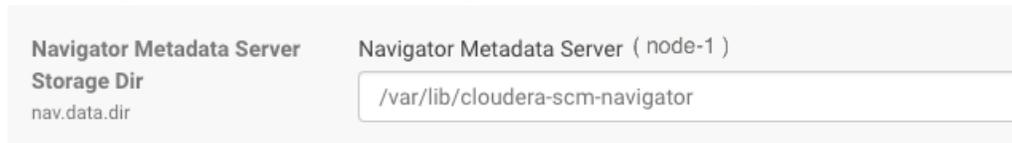
entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:
 - Log in to Cloudera Manager Admin Console.
 - Select **Clusters > Cloudera Management Service**.
 - Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:



- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.
- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046

Cloudera Navigator 6.1.0 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for the data management components of Cloudera Navigator 6.1:

New Features in Cloudera Navigator 6.1.0

The following sections describe what's new and what has changed in the data management components of Cloudera Navigator 6.1.0:

Significant improvements in metadata extraction and purge performance

HDFS metadata extraction can take up significant resources, particularly if the initial build extraction is not completed in a timely interval. Extractors running for long periods then cause the metadata purge operation to be cut short or never run at all. This release addresses these problems by significantly improving metadata extraction for HDFS and HMS and reducing the time required to purge metadata. Together, these improvements will make your Navigator Metadata Server more robust and the resource management more predictable.

- **Incremental metadata extraction from HMS**

This release introduces incremental extraction logic for extracting metadata from Hive Metastore (HMS). The CDH 6.1.0 distribution of Hive makes available additional timing information, which Navigator takes advantage of to perform incremental extraction after the first full extraction is complete. Incremental metadata extraction has the potential to substantially improve the HMS extraction performance. With incremental extraction, Navigator can check for HMS metadata changes much more often, substantially reducing the time required for Hive metadata changes to be reflected in Navigator and Hue.

This feature is disabled by default. Cloudera testing for production data volumes is ongoing.

- **HDFS metadata extraction performance improvement**

Previously, Navigator processing for HDFS metadata extraction could take long enough that Navigator could not finish indexing the `fsimage` before the edit log was checkpointed into a new `fsimage`. This caused extraction to get stuck in a loop of always parsing the `fsimage` in bulk extraction mode (slow) rather than moving into incremental extraction from the edit log (fast). This release includes changes that allow Navigator to avoid this "bulk extraction loop," therefore reducing the duration of HDFS extraction by as much as half for the initial extraction. This change improves the performance of subsequent extractions significantly, both by making it much more likely that extraction will be incremental and from additional performance improvements in this fix.

- **Improved metadata purge performance**

This release includes changes that significantly reduce the time required to complete purging for HDFS entities and relations. The purge behavior is changed such that HDFS entities are not included in the purge if they are referenced as an endpoint in a data flow lineage relation. The performance improvement will shorten the time required to run the HDFS portion of the purge operation; combined that smaller window with the improved extraction performance and the purge jobs are much more likely to run and run to completion.

Improvements to audit extraction filters

This release introduces changes to default HDFS audit filters to better focus the collection of audit events. This change increases the scalability of your Navigator Audit Server system by removing unnecessary audit events.

The following rules were added or updated:

- All HDFS denied access events are accepted. Previously, HDFS denied access events from filtered users and filtered HDFS directories were not recorded.
- HDFS events from the Hive, Spark, and Impala staging directories are discarded. HDFS events from the following job history directories are also discarded:
 - `/user/history/done_intermediate`
 - `/user/spark/applicationHistory`
 - `/user/spark/spark2ApplicationHistory`
- All HDFS delete and rename operations from directories that are not already filtered are accepted.

In addition at the end of the filter list, Cloudera Manager provides a rule that filters events from HDFS `getFileinfo` operations. By default, this filter rule has no affect. Cloudera recommends that you change this rule to **Discard** to stop capturing events for this HDFS operation that indicates access to file *metadata* but does not indicate access to file *data*. This change alone may provide up to 30% reduction in HDFS audit data size.

When upgrading to this release, you may not see the new filters if you have customized your HDFS audit filters previously:

- If HDFS filters have been changed from the default, the new filters will NOT take effect.
- If HDFS filters have not been changed from the default, the new filters will take effect.

Whether or not the new filters are applied, you'll notice that the Cloudera Manager interface has improved controls for adding the audit filters: you have options for setting the order and for duplicating an existing filter to use it as a starting point on a new filter.



Figure 1: Audit Filter Control in Cloudera Manager Service Configuration

To review the recommended filters and determine further optimizations for your system's requirements, see [Recommended Audit Filters](#) and [Reviewing Default Audit Filters](#).

New Cloudera Manager health alerts for Navigator Metadata Server

This release includes new checks for Navigator Metadata Server health. If the checks fail, they trigger a health alert in Cloudera Manager for the Navigator Metadata Server. The checks include "Solr Element Count Threshold" and "Solr Relation Count Threshold". These checks trigger an alert if documents in Navigator Metadata Server's embedded Solr collection are threatening to exceed the maximum allowed number for either the element core or the relation core. Typically, if either of these alerts trigger, Navigator has encountered a problem that produces more relations than it should. The triggers let you know that this problem is occurring while it can be addressed efficiently.

For more information, see [Navigator Metadata Server Solr Element Count Threshold Test](#) and [Navigator Metadata Server Solr Relation Count Threshold Test](#).

Console shows column metadata in the table entity

This release includes improvements to the Navigator console, including improvements to the layout and information in the columns list. When you are viewing the detail page for a table or view, columns show inline descriptions and managed properties. A popover menu lets you see additional column metadata. The inline search in the **Column** box now matches for managed metadata and description text in addition to name and type.

Auto-suggestions in Navigator console search

The Navigator console Search field will now auto-suggest names of entities—tables, views, fields and databases. When you select on of the suggested entities, the console opens the entity details page.

This auto-complete feature also can be used with `db.table.field` search syntax.

New audit events for Fine Grained Privileges and Ownership

Navigator Audit Server receives audit events from Sentry, Hive, and Impala that are produced when an administrator or user changes ownership for a database, table, or view. For more information, see Sentry's [Object Ownership](#) and Navigator's list of [audit events for Sentry](#).

New audit events for HDFS Erasure Coding

Navigator Audit Server receives audit events from HDFS that are produced when an administrator performs a command to manage an HDFS erasure coding policy. For more information, see HDFS's [Erasure Coding](#) introduction and Navigator's list of [audit events for HDFS](#).

Issues Fixed in Cloudera Navigator 6.1.0

The following sections describe the issues fixed in the data management components of Cloudera Navigator 6.1.0:

Null Pointer Exception when processing Impala audits

Navigator Audit Server produced a Null Pointer Exception error and failed to process Impala audits. The error was similar to the following:

```
2018-09-26 01:53:25,341 ERROR
com.cloudera.nav.analytics.dataservices.etl.tasks.audits.AbstractAuditETLTask
[pool-12-thread-2]: Error encountered in executing the task New Databases ETL Task for
service impala. Will continue with remaining sources. java.lang.NullPointerException
```

This problem is fixed in this release.

Cloudera Issue: NAV-6889

Error in Navigator Audit Server log: "IOException: Unexpected length (too long)"

Audit Analytics in the Navigator console were disabled by default in the previous release; however, this change caused certain common operations to throw exceptions in the Navigator Audit Server log:

```
java.io.IOException: Unexpected length (too long): 2064261152, max:10485760
```

This issue is fixed in this release.

Cloudera Issue: NAV-6876

Purge API call produced HTTP error 500

Previously, if the purge API call is made without supplying `deleteTimeThresholdMinutes` or `runtimeCapMinutes`, Navigator Metadata Server returns an HTTP error 500. As of this release, Navigator returns an HTTP error 400.

Cloudera Issue: NAV-6818

Newlines respected in Description field

The entity Description field in the Navigator console now respects newlines and whitespace included in the field text.

Cloudera Issue: NAV-6803

Connection timeout increased in Navigator Audit Server to avoid broken pipe errors

This release of Navigator increases the connection idle time for the connection between Navigator Audit Server and each Cloudera Manager agent that sends audits to Navigator from audited services.

This change will help avoid audit pipeline "broken pipe" errors that can occur when increased load on the audit server node causes Navigator Audit Server not to respond quickly enough.

Cloudera Issue: NAV-6796

Console filter is no longer case sensitive

The audit event filter in the Navigator console was case sensitive for database or table names when audit events are stored in PostgreSQL databases. This release resolves the problem.

Cloudera Issue: NAV-6141, NAV-6795

Incremental metadata extraction from HMS

This release includes incremental extraction for HMS metadata. See [New Features](#) for more information.

Navigator left additional duplicate spark relations

This change removes all duplicate Spark data flow relations, extending the fix provided by [Navigator Metadata Server has high CPU usage, linking taking too long after Spark extraction](#).

Cloudera Issue: NAV-6751

Tables that have been deleted in Hive still show up in Navigator

Navigator metadata extraction from Hive uses an extractor state to keep track of the Hive entities committed to the Navigator Metadata Server data storage in Solr. In some cases, such as when the extractor state file is deleted or when Navigator Metadata Server is shut down during extraction from Hive, the extractor state no longer represents the state of the Hive extraction. When this happens, there may be entities listed in Navigator that are not accounted for in the extractor state. When this happens, Navigator no longer updates the Hive entities that are in Solr but not in the extractor state.

This release includes a check to make sure that the extractor state is synchronized with the content of Hive entities in Solr. To enable the check set the following property in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve)**:

```
nav.extractor.hive.validate_state=true
```

Cloudera Issue: NAV-6745

Better error message for purging deleted properties

When purging deleted properties from the Navigator console, occasionally the error "Failed to start purge. Reason: API: Service Unavailable" appeared. The error occurred when a purge job is already scheduled and another the purge job could not be added to the queue. In this release, the message is changed to better indicate the problem: "Extractors are running. Waiting for jobs to finish before starting maintenance."

Cloudera Issue: NAV-6739

Swagger "Try it out" option for the /audits API fails

Using the interactive Navigator API for the `/audits` endpoint failed with the error:

```
No serializer found for class sun.net.www.protocol.http.HttpURLConnection$HttpInputStream
and
no properties discovered to create BeanSerializer (to avoid exception, disable
SerializationConfig.SerializationFeature.FAIL_ON_EMPTY_BEANS) )"
```

Also, the documentation accompanying the audit API says a selector is `table` but selector is actually `table_name`.

Work-around: Change *limit* to a value less than 10000.

Cloudera Issue: NAV-6664

Third-party libraries upgraded

Navigator does not have direct dependencies on any third-party libraries that contain security vulnerabilities.

Cloudera Issue: NAV-6622

Support for PostgreSQL 10

Navigator Audit Server and Navigator Metadata Server support using MySQL version 10.x for their databases.

Cloudera Issue: NAV-6619

New controls for setting the order of audit filters in Cloudera Manager

The Cloudera Manager interface for adding Navigator audit filters is improved so that it is easier to control the order of the filters and to duplicate an existing filter.

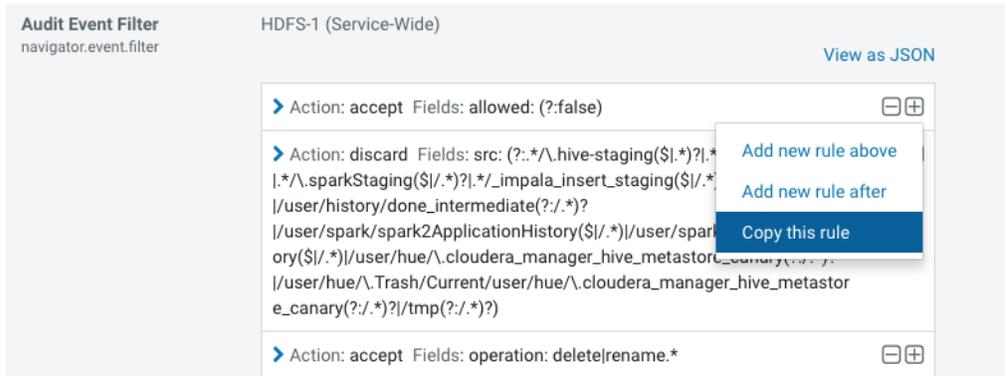


Figure 2: Audit Filter Controls in Cloudera Manager Service Configuration

Cloudera Issue: NAV-6616

Pre-registration was not working for Hive entities

Pre-registration of Hive entities (table, column, or database) fails causing exceptions in the logs such as:

```
java.lang.ClassCastException: com.cloudera.nav.core.model.GenericEntity cannot be cast to com.cloudera.nav.hive.model.HTable
```

Cloudera Issue: NAV-6608

Navigator Metadata Server had high CPU usage, linking taking too long after Spark extraction

In some cases, Navigator Metadata Server processing required an extraordinary amount of memory for longer than expected while extracting and linking metadata when Spark (Spark 1 or Spark 2) extractions are enabled.

A symptom of the problem is a flood of Navigator Metadata Server log messages such as:

```
Finished linking relation with id: <id>
```

This change removes duplicate relations from SPARK data flow relations that were causing the system to use the additional resources.

Cloudera Issue: NAV-6591

Reduced noise of logging for SparkLinker

The Navigator Metadata Server logs included too much logging detail at the `INFO` level coming from the linking process that runs against Spark entities. Many of the log entries were moved to `DEBUG`.

Cloudera Issue: NAV-6560

"ConsoleAppender" error in Hive Server 2 log

After running a query in Hive, the Hive Server 2 standard error log included the following error:

```
log4j:ERROR A "org.apache.log4j.ConsoleAppender" object is not assignable to a "com.cloudera.navigator.shaded.log4j.Appender" variable.
log4j:ERROR The class "com.cloudera.navigator.shaded.log4j.Appender" was loaded by
log4j:ERROR [sun.misc.Launcher$AppClassLoader@47d384ee] whereas object of type
log4j:ERROR "org.apache.log4j.ConsoleAppender" was loaded by
log4j:ERROR [sun.misc.Launcher$AppClassLoader@47d384ee].
log4j:ERROR Could not instantiate appender named "out".
```

This problem occurred because the Navigator plugin for Hive Server 2 expects a different LOG4J integration than what Hive Server 2 is using. The result was that no Navigator audit messages appear in the Hive Server 2 logs. Hive Server 2 auditing was not affected by this problem.

Cloudera Issue: NAV-6523

Auto-suggestions in Navigator console search

The Navigator console Search field will now auto-suggest names of entities—tables, views, fields and databases. When you select one of the suggested entities, the console opens the entity details page.

This auto-complete feature also can be used with `db.table.field` search syntax.

Cloudera Issue: NAV-6496

Navigator did not mark HDFS entities as deleted when bulk extraction took too long to complete

In large HDFS deployments, the `fsimage` takes a long time to index. For Navigator, the fallout of this delay was that no HDFS entities deleted in the cluster were marked as deleted in Navigator. This problem is fixed in this release. See also [HDFS metadata extraction performance improvement](#) on page 1397.

Cloudera Issue: NAV-6456

Duplicate data flow relations after Sqoop operation

After using Sqoop to transfer data to HDFS, Navigator Metadata Server may have duplicated relations between YARN `OPERATION_EXECUTION` entities and HDFS directory entities.

Cloudera Issue: NAV-6446

Cap on lineage relations

Navigator capped the number of lineage parents that could be returned, however this cap included lineage relations with second-level parents (columns). When reaching the limit, the Navigator Metadata Server log included an error such as `Lineage Diagram is limited to 3000 entities`.

Work-around: Set `nav.capacity.max_nodes_limit=1000` in **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** configuration. Restart Navigator Metadata Server and validate that the lineage appears correctly. This workaround assumes that lineage touches a maximum of 1000 tables; increase the limit if necessary to accommodate lineage relations in your environment.

Cloudera Issue: NAV-6371

New behavior in default audit filters

This release includes new audit filters, including denied access events. See [Improvements to audit extraction filters](#) on page 1391.

Cloudera Issue: NAV-6290

Improved metadata purge performance

This release significantly reduces the time required to complete purging for HDFS files. The purge behavior is changed such that HDFS entities are not included in the purge if they are referenced as an endpoint in a data flow lineage relation.

Cloudera Issue: NAV-6284

Console improvements for viewing entity metadata

This release includes improvements to the Navigator console, including improvements to the layout and information in the columns list. When you are viewing the detail page for a table or view, columns show inline descriptions and managed properties. A popover menu lets you see additional column metadata. The inline search in the **Column** box now matches for managed metadata and description text in addition to name and type.

Cloudera Issue: NAV-6234

Multiple Cluster Extractor Failure

When Navigator Metadata Server is started with a fresh storage directory on Cloudera Manager versions 5.12.0 or later, extractors were not working when a single Cloudera Manager managed multiple clusters.

This problem is fixed in this release.

Cloudera Issue: NAV-6145

New Health Alerts for Navigator Metadata Server Solr cores

This release includes new checks for Navigator Metadata Server health. See [New Cloudera Manager health alerts for Navigator Metadata Server](#) on page 1392.

Cloudera Issue: NAV-6116

HDFS metadata extraction performance improvement

Navigator processing for HDFS metadata extraction can take long enough that Navigator cannot finish indexing the `fsimage` before the edit log is checkpointed into a new `fsimage`. This causes extraction to get stuck in a loop of always parsing the `fsimage` in bulk extraction mode (which is slow) rather than moving into incremental extraction from the edit log. This release includes changes that allow Navigator to avoid the bulk extraction loop, therefore reducing the duration of HDFS extraction by as much as half for the initial extraction; performance of subsequent extractions can improve significantly, benefiting both by moving to incremental extraction and by improvements in this fix.

Cloudera Issue: NAV-6033

jQuery version upgrade for security improvements

As of this release, Navigator uses jQuery 3.x, which includes security improvements from the 2.x version. This change does not affect the behavior of the Navigator console.

Cloudera Issue: NAV-6003

ClassCastException in Navigator Metadata Server log

When a Hive view is created, then dropped, and then subsequently recreated as a table with the same name as that of the original view, the Hive extraction process shows this exception in Navigator Metadata Server logs:

```
java.lang.ClassCastException: com.cloudera.nav.hive.model.HView cannot be cast to
com.cloudera.nav.hive.model.HTable
```

Cloudera Issue: NAV-5939

Security headers added for Navigator resources

Security headers are now included on Navigator console resources (such as JavaScript files) so that Navigator console pages pass through security scanners without additional validation.

Cloudera Issue: NAV-5929

Content Security Policy added for Navigator console pages

The Navigator console now includes the Content Security Policy (CSP) support, which introduces an addition layer of security for browsers that support it. See [Mozilla's Policy Browser Compatibility](#)

Cloudera Issue: NAV-5928

Authentication failed with "javax.naming.PartialResultException" when using LDAP

Previously, if Navigator Metadata Server is configured with **External Authentication Type** "LDAP" and the LDAP server is Active Directory, when the **LDAP Group Search Base** property is configured with the root of the directory tree, authentication fails in the console with the error "Incorrect username or password."

Navigator Metadata Server logs show the following exception:

```
2018-10-24 12:21:04,619 ERROR com.cloudera.nav.auth.DelegatingNavAuthProvider
[qtp1989132530-59]:
External Authentication Service threw exception during authentication process.
org.springframework ldap.PartialResultException: Unprocessed Continuation Reference(s);
nested exception is javax.naming.PartialResultException: Unprocessed Continuation
Reference(s);
remaining name 'DC=ad,DC=sec,DC=example,DC=com'
```

There were two common workarounds for this problem: use the Global Catalog or configure a more specific location in the directory tree for the **LDAP Group Search Base**. In this release, the root-level **LDAP Group Search Base** is correctly

evaluated and no work-around is required. If you have configured one of these workarounds, you can keep the configuration as is with no change of behavior.

Cloudera Issue: NAV-5669

New audit events for Fine Grained Privileges and Ownership

Navigator Audit Server receives audit events from Sentry, Hive, and Impala that are produced when an administrator or user changes ownership for a database, table, or view. For more information, see Sentry's [Object Ownership](#) and Navigator's list of [audit events for Sentry](#).

Cloudera Issue: CDH-65161

New audit events for HDFS Erasure Coding

Navigator Audit Server receives audit events from HDFS that are produced when an administrator performs a command to manage an HDFS erasure coding policy. For more information, see HDFS's [Erasure Coding](#) introduction and Navigator's list of [audit events for HDFS](#).

Cloudera Issue: NAV-5266

Impala and Hive audit events failed to be captured when any audit event included 4-byte characters, such as Emoji characters

This problem applies when the Navigator Audit Server database is MySQL configured to use `utf8` character set encoding.

When a query includes an Emoji or other Unicode supplementary-plane character that is encoded as four bytes in UTF-8, Navigator Audit Server failed to process the event and any following events from the same service.

For new installations, you can avoid this issue by configuring MySQL v5.5 or later to use the `utf8mb4` character set encoding. Converting existing MySQL databases for Navigator Metadata Server and Navigator Audit Server to `utf8mb4` requires updating the master tables to meet MySQL restrictions encountered after the change to 4-byte encoding. Contact Cloudera Technical Support for details.

Cloudera Issue: NAV-4845

Missing audit events for one-off processes

Navigator Audit Server did not write audit events for activity from one-off processes spawn by Cloudera Manager. The missing audit events could be for HDFS or HBase, with server log messages as follows:

```
2018-04-07 10:35:09,159 INFO com.cloudera.navigator.analytics.load.AnalyticsStagingService
[AnalyticsStagingService]: Could not load HDFS activity data for analytics
java.lang.IllegalStateException:
Number of files must be > 0
```

or

```
2018-11-29 12:34:25,616 WARN com.cloudera.navigator.NavigatorServer
[653696675@NavigatorServer-1]:
Error persisting events for service hbase java.lang.IllegalArgumentException: No property
'tableName' in
class 'com.cloudera.navigator.model.GenericAuditEvent'.
```

Cloudera Issue: NAV-4006

Audit reports Download option showed incorrect API version

The API version was not correct in the Cloudera Navigator download option for audit reports.

Cloudera Issue: NAV-3699

Easier viewing of SQL text in audit logs

For certain audit events containing SQL, the Navigator console audit entries for SQL now show a preview and an option to expand and format the SQL.

Cloudera Issue: NAV-2331

Known Issues in Cloudera Navigator 6.1.0

The following known issues and limitations from a previous release affect the data management components of Cloudera Navigator 6.1.0:

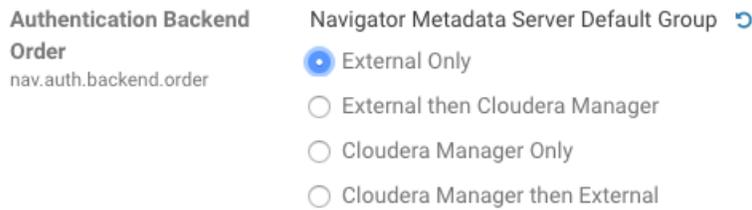
Authentication and Authorization

SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only
- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".



Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824

Cloudera Manager Configuration

Adding a blank audit filter removes filter configuration property

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters are lost. The filter configuration property is removed from Cloudera Manager's list of configuration properties. Reverting the change in the History and Rollback does not restore the previous filters nor reproduce the filter property.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Cloudera Navigator 6.2.1, 6.3.1

Cloudera Issue: NAV-6096

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Hive, Hue, Impala

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>unraveldata.com,hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata';
B = LIMIT A 16;
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]
session_timeout_s=300
query_timeout_s=300
```

- Impala timeouts

See [Setting the Idle Query and Idle Session Timeouts for impalad](#).

- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Navigator Metadata Server

International characters not supported in tags or property names

Navigator tags and the key portion of user-defined and managed properties do not support UNICODE characters beyond ASCII. Only ASCII text can be used in the text of a tag or the name of a property. Property values can include international characters.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Tags are fixed in Cloudera Navigator 6.2.0

Cloudera Issue: NAV-7011, NAV-7044

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor [CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: EndPoint1 must not be null or empty
java.lang.IllegalStateException: EndPoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

Navigator Metadata Server purge jobs may not run if there are policies configured

Navigator Metadata Server purge can produce messages such as "Checking if maintenance is running" and then fail to run during the available window. This problem occurs when a scheduled purge job waits for extraction tasks to finish but while waiting, a policy job starts, preventing the purge job from running.

Workaround: Specifically, to stop policies from running when you are trying to ensure that purge jobs will run, you can delete policies or temporarily change them to run infrequently to give the purge job time to run. When purge jobs have caught up to their backlog of work, you can change the policies back to running more frequently. Note that simply disabling the policies is not sufficient.

More generally, if you find that scheduled purge jobs are not running because there are other Navigator tasks in progress, consider stopping Navigator extractors and setting policies to run much less frequently. Then manually run the metadata purge using an API call to match your Navigator version:

```
curl -X POST -u user:password
"https://navigator_host:7187/api/vXX/maintenance/purge?deleteTimeThresholdMinutes=duration"
```

API versions correspond to Navigator versions as described [Mapping API Versions to Product Versions](#).

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed Versions: Cloudera Navigator 6.2.0

Cloudera Issue: NAV-7037

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
    Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537

Spark

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.
- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Navigator doesn't recognize local files in Spark jobs

Spark jobs can use files on the local filesystem as job inputs or outputs. Navigator, however, only supports HDFS, Hive, and S3 assets as job inputs or outputs. When Navigator extracts metadata from Spark and encounters a local source type, the metadata is discarded and the following error appears in the Navigator Metadata Server log:

```
2018-10-11 12:14:26,192 WARN com.cloudera.nav.api.ApiExceptionMapper
[qtp1574898980-23815]: Unexpected exception.
    java.lang.RuntimeException: Source LOCAL isn't supported for Spark Lineage
```

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed Versions: Cloudera Navigator 6.2.0

Cloudera Issue: NAV-6811

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|---|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:
 - Log in to Cloudera Manager Admin Console.
 - Select **Clusters > Cloudera Management Service**.
 - Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:

| | |
|---------------------------|--------------------------------------|
| Navigator Metadata Server | Navigator Metadata Server (node-1) |
| Storage Dir | /var/lib/cloudera-scm-navigator |
| nav.data.dir | |

- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.
- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046

Cloudera Navigator 6.0.x Data Management Release Notes

To view release notes for the data management components of specific Cloudera Navigator 6.0.x releases, see the following:

[Cloudera Navigator 6.0.1 Release Notes](#)

The following topics describe new features, fixed issues, incompatible changes, and known issues for the data management components of Cloudera Navigator 6.0.1:

[New Features in Cloudera Navigator 6.0.1](#)

There are no new features in the data management components of Cloudera Navigator. See also [Known Issues in Cloudera Navigator 6.0.1](#) on page 1407.

Issues Fixed in Cloudera Navigator 6.0.1

There are no fixed issues in the data management components of Cloudera Navigator. See also [Known Issues in Cloudera Navigator 6.0.1](#) on page 1407.

Known Issues in Cloudera Navigator 6.0.1

The following known issues and limitations from a previous release affect the data management components of Cloudera Navigator 6.0.1:

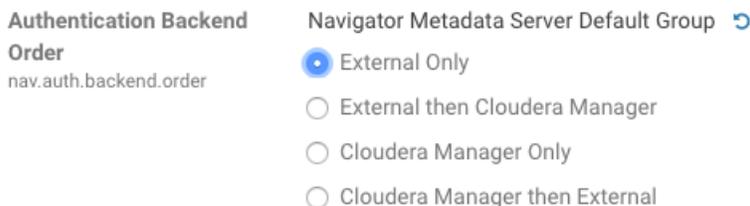
Authentication and Authorization

SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only
- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".



Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824

Cloudera Manager Configuration

Adding a blank audit filter removes filter configuration property

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters are lost. The filter configuration property is removed from Cloudera Manager's list of

configuration properties. Reverting the change in the History and Rollback does not restore the previous filters nor reproduce the filter property.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Cloudera Navigator 6.2.1, 6.3.1

Cloudera Issue: NAV-6096

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Cloudera Manager audit events case-sensitive when using PostgreSQL

When Cloudera Manager and Navigator Audit Server are installed using PostgreSQL databases, the behavior of queries run from the Navigator console is different between the two databases. The result is that Cloudera Manager events are returned only if the query values match the case of the event values as they are stored in the Cloudera Manager database.

For example, the Hive operation "HiveReplicationCommand" is audited by Cloudera Manager; the audit log shows the command as `HIVEREPLICATIONCOMMAND` but querying with upper case fails to return the corresponding audit events. However, querying as `operation = HiveReplicationCommand` does return results.

Audit events other than those for Cloudera Manager are not affected.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: 6.1.0

Cloudera Issue: NAV-6141, NAV-6795

Hive, Hue, Impala

ClassCastException in Navigator Metadata Server log

When a Hive view is created, then dropped, and then subsequently recreated as a table with the same name as that of the original view, the Hive extraction process shows this exception in Navigator Metadata Server logs:

```
java.lang.ClassCastException: com.cloudera.nav.hive.model.HView cannot be cast to
com.cloudera.nav.hive.model.HTable
```

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: Cloudera Navigator 6.1.0

Cloudera Issue: NAV-5939

ConsoleAppender error in Hive Server 2 log

After running a query in Hive, the HiveServer2 `stderr` log includes the following error:

```
log4j:ERROR A "org.apache.log4j.ConsoleAppender" object is not assignable to a
"com.cloudera.navigator.shaded.log4j.Appender" variable.
log4j:ERROR The class "com.cloudera.navigator.shaded.log4j.Appender" was loaded by
log4j:ERROR [sun.misc.Launcher$AppClassLoader@47d384ee] whereas object of type
log4j:ERROR "org.apache.log4j.ConsoleAppender" was loaded by
[sun.misc.Launcher$AppClassLoader@47d384ee].
log4j:ERROR Could not instantiate appender named "out".
```

This problem occurs because the Navigator Audit Server plugin for Hive Server 2 expects a different log4j integration than what HiveServer 2 is using. The result is that no Navigator Audit messages appear in the Hive Server 2 logs. Hive Server 2 auditing is not affected by this problem.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: Cloudera Navigator 6.1.0

Cloudera Issue: NAV-6523

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!-- 'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>unraveldata.com.hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Impala and Hive audit events fail to be captured when one audit event includes 4-byte characters, such as an emoji

This problem applies when the Navigator Audit Server database is a MySQL database configured to use the "UTF8" character set.

When a query includes an emoji or other Unicode supplementary-plane character that is encoded as four bytes in UTF-8, Navigator Audit Server fails to process the event and any following events from the same service.

Workaround: You can resolve this problem by configuring MySQL v5.5 or later to use the "UTF8MB4" character set. The error is described in this Stack Overflow article:

<https://stackoverflow.com/questions/13653712/java-sql-sqlexception-incorrect-string-value-xf0-x9f-x91-xbd-xf0-x9f>

The solution is described in the MySQL documentation topic [The UTF8MB4 Character Set \(4-Byte UTF-8 Unicode Encoding\)](#). Changing the character set requires restarting the MySQL server. It doesn't affect the Navigator Audit Server data.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: 6.1.0

Cloudera Issue: NAV-4845

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata';
B = LIMIT A 16;
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]
session_timeout_s=300
query_timeout_s=300
```

- Impala timeouts
See [Setting the Idle Query and Idle Session Timeouts for impalad](#).
- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Audit reports download option shows incorrect API version

The API version is not correct in the Cloudera Navigator download option for audit reports.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: 6.1.0

Cloudera Issue: NAV-3699

Pending audit events may be lost after role migration

Pending and deleted audit events may be lost during role migration. Pending audit events are those events that have not yet transferred from a source node through the Cloudera Navigator plug-in for the respective role to the Navigator Audit Server. If the Navigator Audit Server is unreachable due to network issues or other issues, the pending audits—which should automatically transfer at the conclusion of the role migration—may be lost.

Workaround: Before migrating a role to a different node:

- Check the state of the Navigator Audit Server (using Cloudera Manager Admin Console).
- Proceed with the role migration only if Navigator Audit Server is running.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-1006

Audit CSV has extra columns and is missing some data

Audit details exported as CSV files do not contain Sentry data. In addition, some of the column names display twice (Operation Text, Database Name, Object Type, for example), although the actual details display only of the duplicate columns.

Workaround: Export audits to JSON format to obtain Sentry data.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-708

Navigator Metadata Server

Navigator does not mark HDFS entities as deleted when in bulk extraction takes too long to complete

In large HDFS deployments, the `fsimage` takes a long time to index. When an HDFS checkpoint occurs it creates a new `fsimage`. However if the previous `fsimage` is still in the process of being indexed, Navigator cannot use the incremental changes found in the `inotify` stream because it refers to the newly created `fsimage`.

When this happens, Navigator attempts to start indexing the newer `fsimage`, creating a loop where Navigator can never take advantage of the more efficient change processing through `inotify`. The immediate fallout of this delay is that no HDFS entities deleted in the cluster will be marked as deleted in Navigator.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: Cloudera Navigator 6.1.0

Cloudera Issue: NAV-6456

International characters not supported in tags or property names

Navigator tags and the key portion of user-defined and managed properties do not support UNICODE characters beyond ASCII. Only ASCII text can be used in the text of a tag or the name of a property. Property values can include international characters.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Tags are fixed in Cloudera Navigator 6.2.0

Cloudera Issue: NAV-7011, NAV-7044

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor
[CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: Endpoint1
must not be null or empty
java.lang.IllegalStateException: Endpoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

Navigator Metadata Server purge jobs may not run if there are policies configured

Navigator Metadata Server purge can produce messages such as "Checking if maintenance is running" and then fail to run during the available window. This problem occurs when a scheduled purge job waits for extraction tasks to finish but while waiting, a policy job starts, preventing the purge job from running.

Workaround: Specifically, to stop policies from running when you are trying to ensure that purge jobs will run, you can delete policies or temporarily change them to run infrequently to give the purge job time to run. When purge jobs have caught up to their backlog of work, you can change the policies back to running more frequently. Note that simply disabling the policies is not sufficient.

More generally, if you find that scheduled purge jobs are not running because there are other Navigator tasks in progress, consider stopping Navigator extractors and setting policies to run much less frequently. Then manually run the metadata purge using an API call to match your Navigator version:

```
curl -X POST -u user:password
"https://navigator_host:7187/api/vXX/maintenance/purge?deleteTimeThresholdMinutes=duration"
```

API versions correspond to Navigator versions as described [Mapping API Versions to Product Versions](#).

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed Versions: Cloudera Navigator 6.2.0

Cloudera Issue: NAV-7037

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
```

```
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
  Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537

Spark

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.
- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Navigator doesn't recognize local files in Spark jobs

Spark jobs can use files on the local filesystem as job inputs or outputs. Navigator, however, only supports HFDS, Hive, and S3 assets as job inputs or outputs. When Navigator extracts metadata from Spark and encounters a local source type, the metadata is discarded and the following error appears in the Navigator Metadata Server log:

```
2018-10-11 12:14:26,192 WARN com.cloudera.nav.api.ApiExceptionMapper
[qtpl574898980-23815]: Unexpected exception.
    java.lang.RuntimeException: Source LOCAL isn't supported for Spark Lineage
```

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed Versions: Cloudera Navigator 6.2.0

Cloudera Issue: NAV-6811

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|---|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:
 - Log in to Cloudera Manager Admin Console.
 - Select **Clusters > Cloudera Management Service**.
 - Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:



- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.
- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046

Cloudera Navigator 6.0.0 Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for the data management components of Cloudera Navigator 6.0.0:

New Features in Cloudera Navigator 6.0.0

The following sections describe what's new and what has changed in the data management components of Cloudera Navigator 6.0.0:

HDFS Analytics disabled by default

The HDFS Analytics available in the Navigator console is now disabled by default.

To enable the HDFS Analytics, set the following properties in the Cloudera Management Service configuration:

1. Set `navigator.analytics.enabled` to be true in the **Navigator Audit Server Advanced Configuration Snippet (Safety Valve) for `cloudera-navigator.properties`**.
2. Set `nav.analytics.audit.enabled` to be true in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for `cloudera-navigator.properties`**.

Cloudera Issue: NAV-6372

Navigator Metadata is now called "Properties"

Some of the Navigator terminology has changed in this release.

| Old Term | New Term |
|------------------|-----------------------|
| Metadata | Property |
| Managed Metadata | Managed Property |
| Custom Metadata | User-defined Property |

User-defined metadata" continues to include properties and tags; we encourage customers to migrate from tags to managed properties. For more information, see [Navigator Business Metadata](#).

Cloudera Issue: NAV-6149

Pre-register metadata for operations

Applications can now pre-register operations in Navigator Metadata Server using a POST `/entities` REST call with a generated operation source ID. For details on generating the ID before making the POST call, see the Navigator SDK example:

<https://github.com/cloudera/navigator-sdk/blob/master/examples/src/main/java/com/cloudera/nav/sdk/examples/hivelineage/CustomHiveLineageCreator.java#L50>

Cloudera Issue: NAV-5940

Navigator version numbering now corresponds to Cloudera Manager versions

As of Cloudera Manager version 6, Cloudera Navigator version numbering tracks with the Cloudera Manager numbering. In this new system, the release that follows Navigator 2.x will be Navigator 6.x. Specifically, functionality from Navigator 2.13

Navigator releases associated with Cloudera Manager 5.x will continue with the previous numbering sequence.

Cloudera Issue: NAV-5368

Hive Metastore instances identified using UUIDs

Navigator used a combination of the Hive HMS database connection URL and driver name configuration values to uniquely identify the HMS and entities source from that HMS. This way of identifying the Hive source could change unexpectedly in cases where the database is migrated to another server.

Fresh installations of Navigator 6.x use the UUID in the metastore database as a unique identifier. In this way, multiple HMS instances can be uniquely identified even in cases where the data is coming from the same backing database.

For new installations, the Hive database UUID will identify the HMS sources. However, Navigator will continue to use the database URL as the Hive source identifier when deployments are upgraded from the Navigator from Cloudera Manager 5.x releases.

Cloudera Issue: NAV-4602

Preventing concurrent logins

An option is now available to limit the number of simultaneous sessions authenticated against the same user name. The property `nav.max.concurrent.sessions` takes an integer value as a limit; set the value to -1 (default) to turn off the limit. To change the default behavior, in Cloudera Manager, add the property with a new value to the "Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for `cloudera-navigator.properties`." Restart the Navigator Metadata Server to apply the change.

Cloudera Issue: NAV-6020

Name and description lengths increased

This release increases the number of characters stored for entity names and descriptions in Navigator Metadata Server:

- Name length was 40 characters and is now 500.
- Description length was 500 and is now not limited.

Cloudera Issue: NAV-6228

Issues Fixed in Cloudera Navigator 6.0.0

The following sections describe the issues fixed in the data management components of Cloudera Navigator 6.0.0:

Trust Store password encrypted

In previous releases, when Cloudera Manager starts Navigator Metadata Server role, it passed trust store password un-encrypted. In this release, when configured to use TLS, the trust store password is encrypted when passed between Cloudera Manager and Navigator.

Cloudera Issue: NAV-6382

Automated clean-up when Navigator Metadata Server storage directory is cleared

When Navigator Metadata Server role starts, it now checks if the Solr storage directory is empty or not. If it is empty, this check resets the ordinal numbers and starts a new Navigator maintenance history record in the Navigator Metadata Server database.

Cloudera Issue: NAV-6267

Web Server and Platform version disclosure removed

This release includes a change to omit the server and platform versions from the web server response header.

Cloudera Issue: NAV-6019

Security headers improved with Cache-Control

This release includes Cache-Control cookie headers with the setting "no-cache" to ensure that no browser content is cached. Navigator Metadata Server, the web server for the Navigator console, already uses the no-cache Cache-Control header for API interactions. This change extends the security coverage to additional content such as JavaScript.

Cloudera Issue: NAV-6018

Less Secure Credentials Protection Policy could expose Azure credentials in audit logs

When you use Cloudera Manager to configure the ADLS Connector service using the Less Secure option for the Credentials Protection Policy, it is possible for Hive audit logs to include Microsoft Azure credentials. If you are using Navigator Audit Server, these credentials may appear in audit reports. To mitigate this problem, make sure that access to Hive logs is appropriately controlled and that Navigator users with Auditing Viewer roles are cleared to have access to the Hive credentials.

Cloudera Issue: NAV-5861

Multi-cluster support for Hive lineage

When there were multiple Hive MetaStore (HMS) sources associated with a single Hive service, the method Navigator used to determine the source was not accurate, resulting in Impala and Spark extractors creating lineage relations that referred to the wrong sources and cross-cluster lineage relations were not generated.

Cloudera Issue: NAV-5859*Table-to-HDFS links were not established when Navigator supported multiple, high-availability clusters*

When Navigator extracts metadata for multiple clusters and when the clusters were configured for high availability operation, Navigator does not correctly link tables to their HDFS backing data. The result is that lineage between Hive tables and their physical data are not created. In addition, some Hive table metadata that is derived from the backing files is not available.

You may see errors in the log such as the following:

```
2018-02-19 09:01:32,999 ERROR com.cloudera.nav.persist.impl.CompositeLinker
[CDHExecutor-0-CDHUrlClassLoader@01010d7e]: Internal error while
linking.java.lang.IllegalArgumentException: expected one element but was:
<com.cloudera.nav.core.model.Source@b22e68ba, com.cloudera.nav.core.model.Source@5b1bac2c>
```

Cloudera Issue: NAV-5749*Accurate dashboard metric for New Queries Executed*

In some situations, the data reported for the Navigator Dashboard item **New Queries Executed** was shown to be larger than the actual number when Impala queries were included in the metrics. This problem has been resolved.

Cloudera Issue: NAV-5742*Known Issues in Cloudera Navigator 6.0.0*

The following sections describe known issues in the data management components of Cloudera Navigator 6.0.0:

Authentication and Authorization

SAML authentication fails with "Cloudera Manager Only" setting

With the following combination of Cloudera Manager configuration properties set, authentication to Navigator fails:

- Authentication Backend Order: Cloudera Manager Only
- External Authentication Type: SAML

Workaround: To configure Navigator for SAML authentication, use an **Authentication Backend Order** other than "Cloudera Manager Only".

Authentication Backend Order
nav.auth.backend.order

Navigator Metadata Server Default Group ↻

- External Only
- External then Cloudera Manager
- Cloudera Manager Only
- Cloudera Manager then External

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6211

Errors when using local login returns the browser to SAML login page

With SAML authentication enabled for Navigator, administrators are allowed to use `locallogin.html` to login with local credentials instead of SAML. However if the administrator enters a wrong username or password, the page is redirected to `login.html?error=true`.

When that happens, the `login.html` URL is no longer a local login and the `login.html` page address gets redirected to the IDP address for SAML authentication.

Workaround: After the login failure, the URL changes to something similar to:

```
https://hostname:7187/login.html?error=true
```

To return to the local login page, change the browser address to a URL similar to:

```
https://hostname:7187/locallogin.html
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5824

Cloudera Manager Configuration

Adding a blank audit filter removes filter configuration property

In Cloudera Manager, when adding an empty rule to a service's Audit Event Filter and then saving the change, all existing audit event filters are lost. The filter configuration property is removed from Cloudera Manager's list of configuration properties. Reverting the change in the History and Rollback does not restore the previous filters nor reproduce the filter property.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Cloudera Navigator 6.2.1, 6.3.1

Cloudera Issue: NAV-6096

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!-- 'hive.exec.post.hooks', originally set to  
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'  
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

At this time, there is no workaround.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-5331

Cloudera Manager audit events case-sensitive when using PostgreSQL

When Cloudera Manager and Navigator Audit Server are installed using PostgreSQL databases, the behavior of queries run from the Navigator console is different between the two databases. The result is that Cloudera Manager events are returned only if the query values match the case of the event values as they are stored in the Cloudera Manager database.

For example, the Hive operation "HiveReplicationCommand" is audited by Cloudera Manager; the audit log shows the command as `HIVEREPPLICATIONCOMMAND` but querying with upper case fails to return the corresponding audit events. However, querying as `operation = HiveReplicationCommand` does return results.

Audit events other than those for Cloudera Manager are not affected.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: 6.1.0

Cloudera Issue: NAV-6141, NAV-6795

Hive, Hue, Impala

ClassCastException in Navigator Metadata Server log

When a Hive view is created, then dropped, and then subsequently recreated as a table with the same name as that of the original view, the Hive extraction process shows this exception in Navigator Metadata Server logs:

```
java.lang.ClassCastException: com.cloudera.nav.hive.model.HView cannot be cast to
com.cloudera.nav.hive.model.HTable
```

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: Cloudera Navigator 6.1.0

Cloudera Issue: NAV-5939

ConsoleAppender error in Hive Server 2 log

After running a query in Hive, the HiveServer2 `stderr` log includes the following error:

```
log4j:ERROR A "org.apache.log4j.ConsoleAppender" object is not assignable to a
"com.cloudera.navigator.shaded.log4j.Appender" variable.
log4j:ERROR The class "com.cloudera.navigator.shaded.log4j.Appender" was loaded by
log4j:ERROR [sun.misc.Launcher$AppClassLoader@47d384ee] whereas object of type
log4j:ERROR "org.apache.logj4.ConsoleAppender" was loaded by
[sun.misc.Launcher$AppClassLoader@47d384ee].
log4j:ERROR Could not instantiate appender named "out".
```

This problem occurs because the Navigator Audit Server plugin for Hive Server 2 expects a different log4j integration than what HiveServer 2 is using. The result is that no Navigator Audit messages appear in the Hive Server 2 logs. Hive Server 2 auditing is not affected by this problem.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: Cloudera Navigator 6.1.0

Cloudera Issue: NAV-6523

Overriding safety valve settings disables audit and lineage features

Customers or third party applications such as Unravel may require that `hive.exec.post.hooks` is configured in a HiveServer2 safety valve. Cloudera Manager will comment out the `hive.exec.post.hooks` value that is configured if audit or lineage is enabled for Hive. The safety valve content shows the commented code:

```
<!--'hive.exec.post.hooks', originally set to
'com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger'
(non-final), is overridden below by a safety valve-->
```

This automated change disables Navigator's auditing and lineage features without notification.

Affected Versions: Cloudera Navigator 6.0.0 and later

Workaround: To fix this problem, manually merge the original HiveServer2 safety valve content for `hive.exec.post.hooks` with the new value. For example, in the case of Unravel, the new safety valve would look like the following:

```
<property>
  <name>hive.exec.post.hooks</name>
  <value>unraveldata.com.hive.hook.HivePostHook,com.cloudera.navigator.audit.hive.HiveExecHookContext,org.apache.hadoop.hive.ql.hooks.LineageLogger</value>
  <description>for Unravel, from unraveldata.com</description>
</property>
```

Cloudera Issue: NAV-5331

Impala and Hive audit events fail to be captured when one audit event includes 4-byte characters, such as an emoji

This problem applies when the Navigator Audit Server database is a MySQL database configured to use the "UTF8" character set.

When a query includes an emoji or other Unicode supplementary-plane character that is encoded as four bytes in UTF-8, Navigator Audit Server fails to process the event and any following events from the same service.

Workaround: You can resolve this problem by configuring MySQL v5.5 or later to use the "UTF8MB4" character set. The error is described in this Stack Overflow article:

<https://stackoverflow.com/questions/13653712/java-sql-sqlexception-incorrect-string-value-xf0-x9f-x91-xbd-xf0-x9f>

The solution is described in the MySQL documentation topic [The UTF8MB4 Character Set \(4-Byte UTF-8 Unicode Encoding\)](#). Changing the character set requires restarting the MySQL server. It doesn't affect the Navigator Audit Server data.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: 6.1.0

Cloudera Issue: NAV-4845

Viewing Navigator tags in Hue overloads Metadata Server heap

When viewing Cloudera Navigator tags through Hue, Navigator uses more memory than usual and does not release the memory after logging out of Hue. Eventually, the calls between Hue and Navigator will occupy the majority of the heap space allocated to Navigator Metadata Server.

Workaround: Restart the Navigator Metadata Server periodically to clear the heap usage.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4326

Lineage not generated for Pig operations on Hive tables using HCatalog loader

When accessing a Hive table using Pig, lineage is generated in Navigator when using physical file loads, such as:

```
A = LOAD '/user/hive/warehouse/navigator_demo.db/salesdata';
B = LIMIT A 16;
STORE B INTO '/user/hive/warehouse/navigator_demo.db/salesdata_sample_file' using
PigStorage ('');
```

However, when accessing the Hive table using the HCatalog load, lineage for the Pig operation is not generated when browsing the source table lineage. Such as:

```
A = LOAD 'navigator_demo.salesdata' using org.apache.hive.hcatalog.pig.HCatLoader();
B = LIMIT A 16;
STORE B INTO 'navigator_demo.salesdata_sample_hcatalog' using
org.apache.hive.hcatalog.pig.HCatStorer();
```

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3411

Impala lineage delay when running queries from Hue

When using Hue to perform Impala queries, after running the query, the lineage doesn't show up in Navigator until Impala determines that the query is complete. Hue gives users the opportunity to pull another set of results on the same query, so Impala holds the query open. Lineage metadata is sent after Impala reaches its configured query timeout or an event such as another query or logging out of Hue occurs.

Workaround: Set low timeouts for queries in Hue or add an Impala query timeout specifically to the Hue safety valve and set the timeout for 3-5 minutes so that you see the queries show up in Navigator after Hue is idle for some time. Hue will notify users that the query needs to be run again, but it also releases the query resources. Here are the options:

- Safety Valve for `hue_safety_valve_server.ini`

```
[impala]
session_timeout_s=300
query_timeout_s=300
```

- Impala timeouts
See [Setting the Idle Query and Idle Session Timeouts for impalad](#).

- Hue session settings

You can set or override the Hue and Impala default settings with session settings in the Impala Editor as described in [IDLE_SESSION_TIMEOUT Query Option](#) and [QUERY_TIMEOUT_S Query Option](#). Note that these settings must be reset per session.

HiveServer1 and Hive CLI support removed

Cloudera Navigator requires HiveServer2 for complete governance Hive queries. Cloudera Navigator does not capture audit events for queries that are run on HiveServer1/Hive CLI, and lineage is not captured for certain types of operations that are run on HiveServer1.

If you use Cloudera Navigator to capture auditing, lineage, and metadata for Hive operations, upgrade to HiveServer2 if you have not done so already.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: TSB-185

Streaming Audit Events

Error blocks second streaming target

When streaming audit messages to both Flume and Kafka, if the Flume client throws an exception, Navigator Audit Server does not send the same messages to Kafka. To recover from this problem, the Flume client needs to be working.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-7143

Navigator Audit Server

Logging Threshold setting is not honored

The value for Navigator Audit Server Logging Threshold found in Cloudera Manager is not honored. Instead, messages are logged at trace level and displayed at DEBUG syslog level. This configuration property is set in **Cloudera Management Service > Configuration > Navigator Audit Server**.

Cloudera Issue: NAV-3737

Audit reports download option shows incorrect API version

The API version is not correct in the Cloudera Navigator download option for audit reports.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: 6.1.0

Cloudera Issue: NAV-3699

Pending audit events may be lost after role migration

Pending and deleted audit events may be lost during role migration. Pending audit events are those events that have not yet transferred from a source node through the Cloudera Navigator plug-in for the respective role to the Navigator Audit Server. If the Navigator Audit Server is unreachable due to network issues or other issues, the pending audits—which should automatically transfer at the conclusion of the role migration—may be lost.

Workaround: Before migrating a role to a different node:

- Check the state of the Navigator Audit Server (using Cloudera Manager Admin Console).
- Proceed with the role migration only if Navigator Audit Server is running.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-1006

Audit CSV has extra columns and is missing some data

Audit details exported as CSV files do not contain Sentry data. In addition, some of the column names display twice (Operation Text, Database Name, Object Type, for example), although the actual details display only of the duplicate columns.

Workaround: Export audits to JSON format to obtain Sentry data.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-708

Navigator Metadata Server

Navigator does not mark HDFS entities as deleted when in bulk extraction takes too long to complete

In large HDFS deployments, the `fsimage` takes a long time to index. When an HDFS checkpoint occurs it creates a new `fsimage`. However if the previous `fsimage` is still in the process of being indexed, Navigator cannot use the incremental changes found in the `inotify` stream because it refers to the newly created `fsimage`.

When this happens, Navigator attempts to start indexing the newer `fsimage`, creating a loop where Navigator can never take advantage of the more efficient change processing through `inotify`. The immediate fallout of this delay is that no HDFS entities deleted in the cluster will be marked as deleted in Navigator.

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1

Fixed Versions: Cloudera Navigator 6.1.0

Cloudera Issue: NAV-6456

International characters not supported in tags or property names

Navigator tags and the key portion of user-defined and managed properties do not support UNICODE characters beyond ASCII. Only ASCII text can be used in the text of a tag or the name of a property. Property values can include international characters.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: Tags are fixed in Cloudera Navigator 6.2.0

Cloudera Issue: NAV-7011, NAV-7044

Navigator Embedded Solr can reach its limit on number of documents it can store



Important: This issue is critical when upgrading Cloudera Navigator deployments from Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0.

Navigator Metadata Server extracts HDFS entities by performing a one-time bulk extraction and then switching to incremental extraction. In Cloudera Manager releases 5.10.0, 5.10.1 and 5.11.0 (Navigator releases 2.9.0, 2.9.1, and 2.10.0), a problem causes HDFS bulk extraction to be run more than one time, resulting in duplicate relations created

for HDFS. Over time, embedded Solr runs out of document IDs that it can assign to new relations and fails with following error:

```
"Caused by: java.lang.IllegalArgumentException: Too many documents, composite IndexReaders
cannot exceed 2147483519"
```

When this happens, Navigator stops any more extraction of data as no new documents can be added to Solr.

After upgrading to this release, there is an additional recover step as described in "Repairing metadata in the storage directory after upgrading" in [Troubleshooting Navigator Data Management](#).

Affected Versions: Versions prior to Cloudera Manager 5.10 upgraded to Cloudera Manager 5.10 or higher

Fixed Versions: N/A

Cloudera Issue: NAV-5600

Log includes the error "EndPoint1 must not be null"

The following error may appear in the Navigator Metadata Server log in systems upgraded from Cloudera Manager version 5.x:

```
2017-10-17 13:00:23,007 ERROR com.cloudera.nav.hive.extractor.AbstractHiveExtractor
[CDHExecutor-0-CDHUrlClassLoader@14784b7b]: Unable to parse hive view query *: EndPoint1
must not be null or empty
java.lang.IllegalStateException: EndPoint1 must not be null or empty
```

This error occurs because the Hive pull extraction for creating a Hive view produces an incorrect lineage relationship for the Hive view. However, Navigator also receives information for the view creation through the push extractor, which correctly produces the lineage relation. You can safely ignore this error.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-4224

Purge

Navigator Metadata Server purge jobs may not run if there are policies configured

Navigator Metadata Server purge can produce messages such as "Checking if maintenance is running" and then fail to run during the available window. This problem occurs when a scheduled purge job waits for extraction tasks to finish but while waiting, a policy job starts, preventing the purge job from running.

Workaround: Specifically, to stop policies from running when you are trying to ensure that purge jobs will run, you can delete policies or temporarily change them to run infrequently to give the purge job time to run. When purge jobs have caught up to their backlog of work, you can change the policies back to running more frequently. Note that simply disabling the policies is not sufficient.

More generally, if you find that scheduled purge jobs are not running because there are other Navigator tasks in progress, consider stopping Navigator extractors and setting policies to run much less frequently. Then manually run the metadata purge using an API call to match your Navigator version:

```
curl -X POST -u user:password
"https://navigator_host:7187/api/vXX/maintenance/purge?deleteTimeThresholdMinutes=duration"
```

API versions correspond to Navigator versions as described [Mapping API Versions to Product Versions](#).

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed Versions: Cloudera Navigator 6.2.0

Cloudera Issue: NAV-7037

First purge job may run twice

Navigator purge jobs are scheduled using UTC. However, the first time Navigator runs a purge, the scheduler triggers the job twice, once in UTC timezone and a second time one in local timezone. After that the schedule is triggered as expected. Other than the first purge running at an unexpected time, there are no side-effects of this issue.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6666

Purge can create data that's too big for Solr to process

Solr's POST request payload is set to 2MB, which can be exceeded when purging a large Navigator metadata storage directory. The purge job fails with an error similar to the following:

```
2018-05-31 02:42:23,959 ERROR
com.cloudera.nav.maintenance.purge.hiveandimpala.PurgeHiveOrImpalaSelectOperations
[scheduler_Worker-1]:
Failed to purge operations for DELETE_HIVE_AND_IMPALA_SELECT_OPERATIONS with error
org.apache.solr.client.solrj.impl.HttpSolrServer$RemoteSolrException:
    Expected mime type application/octet-stream but got application/xml.
```

To work-around this problem, set the following options in the **Navigator Metadata Server Advanced Configuration Snippet (Safety Valve) for cloudera-navigator.properties** in Cloudera Manager:

```
nav.solr.commit_batch_size=50000
nav.solr.batch_size=50000
```

Restart Navigator Metadata Server. Leave these options in place until a more than one purge job has run successfully, then remove the options and restart Navigator Metadata Server.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-6452

Policy specifications and cluster names affect purge

Policies cannot use cluster names in queries. Cluster name is a derived attribute and cannot be used as-is.

Workaround: When setting move actions for Cloudera Navigator, if there is only one cluster known to the Navigator instance, remove the `clusterName` clause.

If there is more than one cluster known to the Navigator instance, replace `clusterName` with `sourceId`. To get the `sourceId`, issue a query in this format:

```
curl '<nav-url>/api/v9/entities/?query=type%3Asource&limit=100&offset=0'
```

Use the identity of the matching HDFS service for this cluster as the `sourceId`.

Affected Versions: Cloudera Navigator 6.0.0 and later

Fixed Versions: N/A

Cloudera Issue: NAV-3537

Spark

Spark Lineage Limitations and Requirements

Spark lineage diagrams are supported in the Cloudera Navigator 6.0 release. Spark lineage is supported for Spark 1.6 and Spark 2.3. Lineage is not available for Spark when Cloudera Manager is running in single user mode. In addition to these requirements, Spark lineage has the following limitations:

- Lineage is produced only for data that is read/written and processed using the Dataframe and SparkSQL APIs. Lineage is not available for data that is read/written or processed using Spark's RDD APIs.
- Lineage information is not produced for calls to aggregation functions such as `groupBy()`.

- The default lineage directory for Spark on Yarn is `/var/log/spark/lineage`. No process or user should write files to this directory—doing so can cause agent failures. In addition, changing the Spark on Yarn lineage directory has no effect: the default remains `/var/log/spark/lineage`.

Navigator doesn't recognize local files in Spark jobs

Spark jobs can use files on the local filesystem as job inputs or outputs. Navigator, however, only supports HFDS, Hive, and S3 assets as job inputs or outputs. When Navigator extracts metadata from Spark and encounters a local source type, the metadata is discarded and the following error appears in the Navigator Metadata Server log:

```
2018-10-11 12:14:26,192 WARN com.cloudera.nav.api.ApiExceptionMapper
[qtp1574898980-23815]: Unexpected exception.
    java.lang.RuntimeException: Source LOCAL isn't supported for Spark Lineage
```

Affected Versions: Cloudera Navigator 6.0.0, 6.0.1, 6.1.0, 6.1.1

Fixed Versions: Cloudera Navigator 6.2.0

Cloudera Issue: NAV-6811

Spark extractor enabled using safety valve deprecated

The Spark extractor included prior to CDH 5.11 and enabled by setting the safety valve, `nav.spark.extraction.enable=true` is being deprecated, and could be removed completely in a future release. If you are upgrading from CDH 5.10 or earlier and were using the extractor configured with this safety valve, be sure to remove the setting when you upgrade.

Upgrade Issues and Limitations

Upgrading Cloudera Navigator from Cloudera Manager 5.9 or Earlier Can be Extremely Slow

Upgrading a cluster running Cloudera Navigator to Cloudera Manager 5.10 (or higher) can be extremely slow due to an internal change made to the Solr schema in Cloudera Navigator 2.9. A Solr instance is embedded in Cloudera Navigator and supports its search capabilities. The Solr schema used by Cloudera Navigator has been modified in the 2.9 release to use datatype `long` rather than `string` for an internal `id` field. This change makes Cloudera Navigator far more robust and scalable over the long term.

However, the upgrade process itself can take a significantly long time because the existing Solr documents—the indexed and searchable data structures used by Solr that are contained in the Cloudera Navigator storage directory—are migrated to the new schema. This change to the Solr schema affects only those Cloudera Navigator deployments that use the metadata and lineage features.



Note: Cloudera Navigator deployments that use only the auditing features of the product—not metadata or lineage—are not affected by this issue.

The upgrade process for Cloudera Navigator starts automatically at the end of the Cloudera Manager upgrade, and the migration to the new schema occurs automatically as part of that upgrade process. The Navigator Metadata Server and Navigator console are not available during the upgrade. Navigator Audit Server runs normally. The amount of time that administrators should allow for this process depends on the quantity stored at the Navigator Metadata Server Storage Dir (`nav.data.dir`, or simply "storage directory") location as listed here:

| Metadata and lineage usage | Description |
|----------------------------|--|
| None | Deployments that use Cloudera Navigator audit capability only —without metadata or lineage—do not have the issue. Backup the Navigator Metadata Server storage directory and then delete it before upgrading. |
| storage directory < 60 GB | Deployments with relatively small Navigator Metadata Server data directories may take 1 to 2 days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

| Metadata and lineage usage | Description |
|----------------------------|---|
| storage directory > 60 GB | Deployments with relatively large Navigator Metadata Server data directories may take several days for the upgrade process to complete. See the workaround below for steps to take before upgrading to Cloudera Manager 5.10 to possibly reduce the upgrade time. |

Workaround: To reduce the time required for upgrading the Navigator Metadata Server data directories for deployments currently running Cloudera Navigator 2.8 that uses its metadata and lineage features, consider removing unneeded entries from the metadata before the upgrade. The Navigator Purge feature allows you to remove metadata for deleted entities and for entities and operations older than a specified date. For more information on what metadata you can remove with Purge, see [Managing Metadata Storage with Purge](#).

Run purge before starting the Cloudera Manager upgrade (to Cloudera Manager 5.10), following the steps below.



Warning: These steps may mitigate but do not fully resolve the issue. Follow these steps **before** starting the Cloudera Manager upgrade for any Cloudera Manager 5.9 or earlier cluster that currently uses the Cloudera Navigator metadata and lineage features.

- Check the Navigator Metadata Server storage directory size. The path is `/var/lib/cloudera-scm-navigator` (default) unless configured otherwise. If you need to check the setting:
 - Log in to Cloudera Manager Admin Console.
 - Select **Clusters > Cloudera Management Service**.
 - Click **Configuration** and then click the **Navigator Metadata Server** Scope filter:

| Navigator Metadata Server | Navigator Metadata Server (node-1) |
|-----------------------------|--|
| Storage Dir nav.data.dir | <input type="text" value="/var/lib/cloudera-scm-navigator"/> |

- Confirm that the cluster uses the default configuration, or make a note of the location specified and the node name.
- Check the size of the actual directory contents. The following example shows a freshly installed system and so it is virtually empty.

```
[root@node-1 ~]# cd /var/lib/cloudera-scm-navigator
[root@node-1 cloudera-scm-navigator]# ls -l
total 12
drwxr-x--- 2 cloudera-scm cloudera-scm 113 Jul 12 06:56 diagnosticData
drwxr-x--- 2 cloudera-scm cloudera-scm 4096 Jul 12 09:16 extractorState
-rw-r----- 1 cloudera-scm cloudera-scm 36 Jul 12 05:54 instance.uuid
drwxr-x--- 4 cloudera-scm cloudera-scm 60 Jul 12 04:18 solr
drwxr-x--- 7 cloudera-scm cloudera-scm 4096 Jul 12 07:26 temp
[root@node-1 cloudera-scm-navigator]# cd solr
[root@node-1 solr]# ls -l
total 4
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_elements
drwxr-x--- 4 cloudera-scm cloudera-scm 28 Jul 12 05:56 nav_relations
-rw-r----- 1 cloudera-scm cloudera-scm 450 Jul 6 16:13 solr.xml
[root@node-1 solr]#
```

- Back up the contents of the directory. Use Cloudera Manager BDR or your preferred method.
- Schedule a purge process as described in [Scheduling the Purge Process](#).



Note: Users and processes cannot access Cloudera Navigator while purge is running.

Set options to purge metadata for deleted HDFS entities and any operations.

- Check the storage directory size again. If needed, re-run the purge with a shorter time span to retain metadata. If the storage directory consumption cannot be reduced below 60GB, do not start the Cloudera Manager upgrade. Instead, contact [Cloudera support](#) to help you with this upgrade.

Affected Versions: Cloudera Navigator 6.x

Fixed Versions: N/A

Cloudera Issue: NAV-5046

Cloudera Navigator 6 Encryption Release Notes



Note: For Cloudera Navigator 6 data management component release notes, see [Cloudera Navigator 6 Data Management Release Notes](#) on page 1328.

These Release Notes provide information on the new features and known issues and limitations for the following Cloudera Navigator encryption components:

- Cloudera Navigator Key Trustee Server
- Cloudera Navigator Key HSM
- Cloudera Navigator Key Trustee KMS
- Cloudera Navigator HSM KMS
- Cloudera Navigator Encrypt

For information about supported operating systems, and other requirements for using Cloudera Navigator encryption components, see [Cloudera Enterprise 6 Requirements and Supported Versions](#) on page 5.

For more information about installing and configuring Cloudera Navigator encryption components, see [Cloudera Installation Guide](#).

To view release notes for the encryption components of a specific Cloudera Navigator 6 release, see the following:

Cloudera Navigator 6.3.x Encryption Release Notes

To view release notes for the encryption components of specific Cloudera Navigator 6.3.x releases, see the following:

[Cloudera Navigator 6.3.3 Encryption Release Notes](#)

No Cloudera Navigator Encryption products were updated or released for CDH 6.3.3.

[Cloudera Navigator 6.3.1 Encryption Release Notes](#)

No Cloudera Navigator Encryption products were updated or released for CDH 6.3.1.

[Cloudera Navigator 6.3.0 Encryption Release Notes](#)

The following topics describe new features, fixed issues, incompatible changes, and known issues for the encryption components of Cloudera Navigator 6.3.0:

[New Features in Cloudera Navigator 6.3.0 Encryption](#)

See below for new features in the encryption components of Cloudera Navigator 6.3.0, grouped by component:

[New Features in Cloudera Navigator Key Trustee Server 6.1.0](#)

Navigator Key Trustee Server is not released in 6.3.0.

[New Features in Cloudera Navigator Key HSM 6.3.0](#)

This release of Navigator Key HSM provides support for the following.

- OpenJDK 11

New Features in Cloudera Navigator Key Trustee KMS 6.3.0

This release of Cloudera Navigator Key Trustee KMS provides support for the following:

- OpenJDK 11

New Features in Cloudera Navigator HSM KMS 6.3.0

This release of Cloudera Navigator HSM KMS provides support for the following:

- OpenJDK 11

New Features in Cloudera Navigator Encrypt 6.2.0

Cloudera Navigator Encrypt is not released in 6.3.0.

Issues Fixed in Cloudera Navigator 6.3.0 Encryption

See below for issues fixed in the encryption components of Cloudera Navigator 6.3.0:

Issues Fixed in Cloudera Navigator Key Trustee Server 6.1.0

There are no new fixed issues for Navigator Key Trustee Server in 6.1.0.

Issues Fixed in Cloudera Navigator Key HSM 6.3.0

KeySecure HSM not supported

The KeySecure HSM is not supported in this release.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6001

Workaround: None.

Issues Fixed in Navigator Key Trustee KMS 6.3.0

There are no new fixed issues for Navigator Key Trustee KMS in 6.3.0.

Issues Fixed in Navigator HSM KMS 6.3.0

There are no new fixed issues for Navigator HSM KMS in 6.3.0.

Issues Fixed in Navigator Encrypt 6.2.0

There are no new fixed issues for Navigator Encrypt in 6.2.0.

Known Issues in Cloudera Navigator 6.3.0 Encryption

The following sections describes known issues in the encryption components of Cloudera Navigator 6.3.0, grouped by component:

Known Issues in Cloudera Navigator Key Trustee Server 6.1.0



Warning:

Interrupting deposit migration from Key Trustee Server to Key HSM can result in lost data

Workaround: Do not interrupt deposit migration to Key HSM.

Additional Key Trustee Server process appears after key creation when passive database is stopped

If a key is created while the passive Key Trustee Server database is down, the key creation will fail with the message, "Database write timed out." In this case, even after the passive database comes up, a hanging Key Trustee Server process thread may remain on the system attempting to complete the write. To view which Key Trustee Server processes are running, enter:

```
ps -ef | grep keytrustee | grep -v postgres
```

In normal operations there should be only one Key Trustee Server process running.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6684

Workaround: These extra Key Trustee Server processes do not cause any errors with the Key Trustee Server, but they will not be cleaned up properly when the Key Trustee Server is shut down. To fully shut down the Key Trustee Server when there are extra processes running, stop the Key Trustee Server service, and then kill any remaining processes.

Key Trustee Server active database setup fails when command line configuration specifies non-default database port

If the Key Trustee Server is configured from the command line to use a non-default database port (the default port is 11381), then when the Key Trustee Server service is added to Cloudera Manager, the first database startup fails.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6238

Workaround:

1. Log in to the Key Trustee Server and manually stop/start the databases:

```
service keytrustee-db stop
```

Make sure that the `postmaster.pid` file, which is located in the database directory, no longer exists. If necessary, replace `/var/lib/keytrustee/db` in the following command with the appropriate database directory for your system:

```
# ls /var/lib/keytrustee/db/postmaster.pid
```

If `postmaster.pid` has not been cleaned up, then use the `pg_ctl` utility to stop the database directly:

```
# pg_ctl stop
```

2. Return to the Cloudera Manager home page where the Key Trustee Server service is listed.
3. Go into the Key Trustee Server service configuration and for **Key Trustee Server Database Port**, specify the port that was configured during the command line configuration.
4. Redeploy the Key Trustee Server configuration and restart the service.

Key Trustee KMS cannot connect to Key Trustee Server using TLS versions other than 1.0 on JDK 7

If you have configured Key Trustee Server to use a TLS version other than 1.0, Key Trustee KMS fails to connect to Key Trustee Server, and key operations fail when using JDK 7.

Workaround: Use TLS version 1.0 only, or JDK 8.

Key Trustee Server cannot use TLS version 1.2 on RHEL 6

Configuring Key Trustee Server to use TLS version 1.2 causes Key Trustee Server to be unable to start.

Workaround: Use your operating system package manager to upgrade the `pyOpenSSL` package to version 1.4 or higher, or do not configure Key Trustee Server to use TLS version 1.2.

Key Trustee Server PKCS8 private key cannot communicate with Key HSM

If its private key is in PKCS8 format, Key Trustee Server cannot communicate with Key HSM.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-3172

Workaround: Convert the Key Trustee Server private key to raw RSA format.

Known Issues in Cloudera Navigator Key HSM 6.3.0

Thales Key HSM won't work with OpenJDK 11

Thales Key HSM is unsupported because the Thales client Java libraries do not support Java 11.

Affected Version: 6.3.0

Cloudera Bug: KT-6854

Workaround: None.

Roll key command throws an exception and cannot retrieve metadata for key

When using Key Trustee KMS with Key Trustee Server and Key HSM (backed by an HSM device), if there is significant (> 15 ms ping time) network latency between the Key Trustee Server and the HSM device, then EDEK generation errors can occur during the roll key operation. These errors manifest in the KMS log as errors on the `generateEncryptedKey` operation. The KMS will recover from these errors on its own, but they may represent a nuisance to the operator.

Affected Version: 6.0.0, 6.1.0, 6.2.0, 6.3.0

Cloudera Bug: KT-5646

Workaround: When these errors occur, you can use the `hadoop key list -metadata` command to confirm whether or not the key roll was successful, despite the error condition.

Key HSM Luna setup not showing the correct login status

When running the `keyhsm setup luna` command, you are prompted for the Luna HSM slot number and login password. Key HSM then attempts to log into the Luna HSM to verify these settings are correct. In some circumstances, the setup script reports that the login was successful, even if it failed.

Affected Version: 6.0.0, 6.1.0, 6.2.0, 6.3.0

Cloudera Bug: KT-6623

Workaround: Any incorrect settings will cause the Key HSM service to throw an exception upon startup and exit. If the Key HSM service does not start correctly, check the log for the message: "Unable to sign into Luna HSM server. Please rerun application with 'setup' option to configure password." If this message appears, re-run the `keyhsm setup luna` command, and enter the correct slot number and login password.

Known Issues in Cloudera Navigator Key Trustee KMS 6.3.0

The Key Trustee KMS service fails to start if the Trust Store is configured without also configuring the Keystore

If you configure the Key Trustee KMS service **Key Management Server Proxy TLS/SSL Certificate Trust Store File** and **Key Management Server Proxy TLS/SSL Certificate Trust Store Password** parameters without also configuring the **Key Management Server Proxy TLS/SSL Server JKS Keystore File Location** and **Key Management Server Proxy TLS/SSL Server JKS Keystore File Password** parameters, the Key Trustee KMS service does not start.

Workaround: Configure all Trust Store and Keystore parameters.

Key Trustee KMS backup script fails if PostgreSQL versions lower than 9.3 are installed

If PostgreSQL versions lower than 9.3 are installed on the Key Trustee KMS host, the `ktbackup.sh` script fails with an error similar to the following:

```
pg_dump: server version: 9.3.11; pg_dump version: 9.2.14
pg_dump: aborting because of server version mismatch
```

Workaround: Uninstall the lower PostgreSQL version.

*Known Issues in Cloudera Navigator HSM KMS 6.3.0***Encryption zone key is not deleted after migrating from Key Trustee KMS to HSM KMS**

After migrating keys from the Key Trustee KMS to the HSM KMS, the HSM KMS service should be restarted. Until it is restarted, any keys that are deleted after the migration may still be cached. If a deleted key is cached, then the data encrypted with that key can still be accessed even though the key has been deleted.

Affected Version: 6.0.0, 6.1.0, 6.2.0, 6.3.0

Cloudera Bug: KT-6434

Workaround: Restart the HSM KMS service after the key migration is complete.

*Known Issues in Cloudera Navigator Encrypt 6.2.0***Navigator Encrypt cannot create an ACL when Key Trustee Server is down**

Navigator Encrypt cannot create new ACLs when the Key Trustee Server is down. Navigator Encrypt will attempt to verify the master key with the Key Trustee Server when adding ACLs, even if the master key should already have been cached on the local system. If it can't communicate with the Key Trustee Server, the add ACL request will fail.

Affected Version: 6.1.0, 6.2.0

Cloudera Bug: KT-6390

Workaround: Make sure the Key Trustee Server is running before making modifications to Navigator Encrypt ACLs.

Issue with `navencrypt-mount` service status message

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6309

On RHEL 7, the `service navencrypt-mount stop` command might return a successful exit status message, even if there was a problem stopping Navigator Encrypt. This is not an issue with the `navencrypt-mount service` command; rather, it is a problem with the message output.

You can verify that `navencrypt-mount` stopped successfully by checking for the presence of the `navencryptfs` module in the `lsmod` output:

```
# lsmod | grep navencrypt
navencryptfs 101407 0
```

Alternatively, you can verify that the `navencrypt` mount points successfully dismounted by checking the output of the `df` or `mount` commands.

Workaround: None.

Cloudera Navigator 6.2.x Encryption Release Notes

To view release notes for the encryption components of specific Cloudera Navigator 6.2.x releases, see the following:

Cloudera Navigator 6.2.1 Encryption Release Notes

No Cloudera Navigator Encryption products were updated or released for 6.2.1.

Cloudera Navigator 6.2.0 Encryption Release Notes

The following topics describe new features, fixed issues, incompatible changes, and known issues for the encryption components of Cloudera Navigator 6.2.0:

New Features in Cloudera Navigator 6.2.0 Encryption

See below for new features in the encryption components of Cloudera Navigator 6.2.0, grouped by component:

New Features in Cloudera Navigator Key Trustee Server 6.2.0

Navigator Key Trustee Server is not released in 6.2.0.

New Features in Cloudera Navigator Key HSM 6.2.0

Navigator Key HSM is not released in 6.2.0.

New Features in Cloudera Navigator Key Trustee KMS 6.2.0

This release of Cloudera Navigator Key Trustee KMS provides support for the following platforms:

- RHEL and CentOS 7.6
- Oracle Linux 7.6
- Ubuntu 18 (Bionic)

New Features in Cloudera Navigator HSM KMS 6.2.0

This release of Cloudera Navigator HSM KMS provides support for the following platforms:

- RHEL and CentOS 7.6

New Features in Cloudera Navigator Encrypt 6.2.0

This release of Cloudera Navigator Encrypt provides support for the following platforms:

- RHEL and CentOS 7.6
- Oracle Linux 7.6
- Ubuntu 18 (Bionic)

Issues Fixed in Cloudera Navigator 6.2.0 Encryption

See below for issues fixed in the encryption components of Cloudera Navigator 6.2.0:

Issues Fixed in Navigator Key Trustee KMS 6.2.0

There are no new fixed issues for Navigator Key Trustee KMS in 6.2.0.

Issues Fixed in Navigator HSM KMS 6.2.0

There are no new fixed issues for Navigator HSM KMS in 6.2.0.

Issues Fixed in Navigator Encrypt 6.2.0

There are no new fixed issues for Navigator Encrypt in 6.2.0.

Known Issues in Cloudera Navigator 6.2.0 Encryption

The following sections describes known issues in the encryption components of Cloudera Navigator 6.2.0, grouped by component:

Known Issues in Cloudera Navigator Key Trustee Server 6.2.0



Warning:

Interrupting deposit migration from Key Trustee Server to Key HSM can result in lost data

Workaround: Do not interrupt deposit migration to Key HSM.

Additional Key Trustee Server process appears after key creation when passive database is stopped

If a key is created while the passive Key Trustee Server database is down, the key creation will fail with the message, "Database write timed out." In this case, even after the passive database comes up, a hanging Key Trustee Server process thread may remain on the system attempting to complete the write. To view which Key Trustee Server processes are running, enter:

```
ps -ef | grep keytrustee | grep -v postgres
```

In normal operations there should be only one Key Trustee Server process running.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6684

Workaround: These extra Key Trustee Server processes do not cause any errors with the Key Trustee Server, but they will not be cleaned up properly when the Key Trustee Server is shut down. To fully shut down the Key Trustee Server when there are extra processes running, stop the Key Trustee Server service, and then kill any remaining processes.

Key Trustee Server active database setup fails when command line configuration specifies non-default database port

If the Key Trustee Server is configured from the command line to use a non-default database port (the default port is 11381), then when the Key Trustee Server service is added to Cloudera Manager, the first database startup fails.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6238

Workaround:

1. Log in to the Key Trustee Server and manually stop/start the databases:

```
service keytrustee-db stop
```

Make sure that the `postmaster.pid` file, which is located in the database directory, no longer exists. If necessary, replace `/var/lib/keytrustee/db` in the following command with the appropriate database directory for your system:

```
# ls /var/lib/keytrustee/db/postmaster.pid
```

If `postmaster.pid` has not been cleaned up, then use the `pg_ctl` utility to stop the database directly:

```
# pg_ctl stop
```

2. Return to the Cloudera Manager home page where the Key Trustee Server service is listed.
3. Go into the Key Trustee Server service configuration and for **Key Trustee Server Database Port**, specify the port that was configured during the command line configuration.
4. Redeploy the Key Trustee Server configuration and restart the service.

Key Trustee KMS cannot connect to Key Trustee Server using TLS versions other than 1.0 on JDK 7

If you have configured Key Trustee Server to use a TLS version other than 1.0, Key Trustee KMS fails to connect to Key Trustee Server, and key operations fail when using JDK 7.

Workaround: Use TLS version 1.0 only, or JDK 8.

Key Trustee Server cannot use TLS version 1.2 on RHEL 6

Configuring Key Trustee Server to use TLS version 1.2 causes Key Trustee Server to be unable to start.

Workaround: Use your operating system package manager to upgrade the `pyOpenSSL` package to version 1.4 or higher, or do not configure Key Trustee Server to use TLS version 1.2.

Key Trustee Server PKCS8 private key cannot communicate with Key HSM

If its private key is in PKCS8 format, Key Trustee Server cannot communicate with Key HSM.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-3172

Workaround: Convert the Key Trustee Server private key to raw RSA format.

Known Issues in Cloudera Navigator Key HSM 6.2.0

Roll key command throws an exception and cannot retrieve metadata for key

When using Key Trustee KMS with Key Trustee Server and Key HSM (backed by an HSM device), if there is significant (> 15 ms ping time) network latency between the Key Trustee Server and the HSM device, then EDEK generation errors can occur during the roll key operation. These errors manifest in the KMS log as errors on the `generateEncryptedKey` operation. The KMS will recover from these errors on its own, but they may represent a nuisance to the operator.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-5646

Workaround: When these errors occur, you can use the `hadoop key list -metadata` command to confirm whether or not the key roll was successful, despite the error condition.

KeySecure HSM not supported

The KeySecure HSM is not supported in this release.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6001

Workaround: None.

Key HSM Luna setup not showing the correct login status

When running the `keyhsm setup luna` command, you are prompted for the Luna HSM slot number and login password. Key HSM then attempts to log into the Luna HSM to verify these settings are correct. In some circumstances, the setup script reports that the login was successful, even if it failed.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6623

Workaround: Any incorrect settings will cause the Key HSM service to throw an exception upon startup and exit. If the Key HSM service does not start correctly, check the log for the message: "Unable to sign into Luna HSM server. Please rerun application with 'setup' option to configure password." If this message appears, re-run the `keyhsm setup luna` command, and enter the correct slot number and login password.

The `keyhsm trust` command fails

When performing setup of Key HSM, the `ktadmin keyhsm --server http://server:port --trust` command may fail with the following message: "Unable to connect to Key HSM server at this address. Is the server running, and is this KeyTrustee instance trusted (by running `keyhsm trust`)?" This failure can occur even if you have already successfully executed the `keyhsm trust` command.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6131

Workaround: Re-execute the `keyhsm trust` command, and then retry the `ktadmin keyhsm` command.

Upgrading Key HSM removes init script and binary

Upgrading Key HSM from 1.4.x to 1.5.x and higher removes the Key HSM init script and `/usr/bin/keyhsm` binary.

Workaround: Reinstall Key HSM:

```
sudo yum reinstall keytrustee-keyhsm
```

Key HSM cannot trust Key Trustee Server certificate if it has extended attributes

Key HSM cannot trust the Key Trustee Server certificate if it has extended attributes, and therefore cannot integrate with Key Trustee Server.

Workaround: Import the Key Trustee Server certificate to the Key HSM trust store using Java `keytool` instead of the `keyhsm trust` command.

Known Issues in Cloudera Navigator Key Trustee KMS 6.2.0

The Key Trustee KMS service fails to start if the Trust Store is configured without also configuring the Keystore

If you configure the Key Trustee KMS service **Key Management Server Proxy TLS/SSL Certificate Trust Store File** and **Key Management Server Proxy TLS/SSL Certificate Trust Store Password** parameters without also configuring the **Key Management Server Proxy TLS/SSL Server JKS Keystore File Location** and **Key Management Server Proxy TLS/SSL Server JKS Keystore File Password** parameters, the Key Trustee KMS service does not start.

Workaround: Configure all Trust Store and Keystore parameters.

Key Trustee KMS backup script fails if PostgreSQL versions lower than 9.3 are installed

If PostgreSQL versions lower than 9.3 are installed on the Key Trustee KMS host, the `ktbackup.sh` script fails with an error similar to the following:

```
pg_dump: server version: 9.3.11; pg_dump version: 9.2.14
pg_dump: aborting because of server version mismatch
```

Workaround: Uninstall the lower PostgreSQL version.

Known Issues in Cloudera Navigator HSM KMS 6.2.0

Encryption zone key is not deleted after migrating from Key Trustee KMS to HSM KMS

After migrating keys from the Key Trustee KMS to the HSM KMS, the HSM KMS service should be restarted. Until it is restarted, any keys that are deleted after the migration may still be cached. If a deleted key is cached, then the data encrypted with that key can still be accessed even though the key has been deleted.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6434

Workaround: Restart the HSM KMS service after the key migration is complete.

KT KMS migration to HSM KMS fails if a key is not found on HSM

When using Key Trustee KMS with Key Trustee Server and Key HSM (backed by an HSM device), if a key version is deleted on the HSM device directly without also deleting and purging that key version on the Key Trustee KMS, then attempts to migrate from the KT KMS to the HSM KMS will fail.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-5671

Workaround: None.

HSM KMS proxy fails to start during key migration

When migrating keys from the Key Trustee KMS to the HSM KMS, the HSM KMS Proxy may fail to start and return a fatal error.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6431

Workaround: Navigate to the **Additional Java Configuration Options for KMS** setting in the HSM KMS configuration, and ensure that the HSM KMS truststore matches the truststore used by the Key Trustee KMS:

```
-Djavax.net.ssl.trustStore=/path/to/truststore
```

You can remove this option after completing the migration.

HSM KMS Thales Proxy role fails to start with non-default Thales HSM Server Port

Port 9001 is used by Cloudera Manager services, and it is also the default privileged port for the Thales HSM KMS. If you use port 9001 for the Thales HSM KMS, it will prevent the CM 6.0.0 upgrade from completing successfully.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6403

Workaround: If the Thales HSM KMS already exists, then before upgrading to Cloudera Manager 6.0.0, you must change the privileged Thales HSM KMS port; the recommended port is 11501. The non-privileged port default is 9000, and does not need to be changed.

If you are newly installing the Thales HSM KMS on a 6.0.0 system, then you must set the port to a non-default value before adding the HSM KMS backed by Thales service in Cloudera Manager.

To change the privileged port, log into the Thales HSM KMS machine(s), and run the following commands:

```
# sudo /opt/nfast/bin/config-serverstartup --enable-tcp --enable-privileged-tcp
--privport=11501
[server_settings] change successful; you must restart the hardserver for this to take
effect
# sudo /opt/nfast/sbin/init.d-ncipher restart
-- Running shutdown script 90ncsnmpd

-- Running shutdown script 60raserv

...

'ncsnmpd' server now running
```

After successfully running the commands, restart the Thales HSM KMS.

Key store key password specified in Cloudera Manager is not properly used by HSM KMS Service

If the Navigator HSM KMS Proxy TLS/SSL Server JKS Keystore File Password and the Navigator HSM KMS Proxy TLS/SSL Server JKS Keystore Key Password are not both specified or differ from each other, then the HSM KMS inter-node handshake fails and HSM KMS High Availability is not configured.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6020

Workaround: Use the same password for the keystore file and the keystore key file.

Timeout error during encryption zone key creation

There are situations where the key cache is synchronously populated to capacity during the create encryption zone operation. The expected behavior is that the key cache is synchronously populated only to the low watermark level (the rest of the keys should be created asynchronously).

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-5296

Workaround: On the HSM KMS, in the field **HSM KMS Proxy Advanced Configuration Snippet (Safety Valve)** for kms-site.xml:

- hadoop.security.kms.encrypted.key.cache.low.watermark .05
- hadoop.security.kms.encrypted.key.cache.size 30

On the HDFS, in the field **HDFS Cluster-wide Advanced Configuration Snippet (Safety Valve)** for `core-site.xml`:

- `hadoop.security.kms.client.encrypted.key.cache.size` 30
- `hadoop.security.kms.client.encrypted.key.cache.low-watermark` .05

HSM KMS Luna may need to be restarted if inactive for extended period

If Hadoop key operations return `com.safenetinc.luna.exception.LunaCryptokiException` after the KMS has been running without activity for an extended period time, the Luna session may have been dropped.

Affected Version(s): 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-5018

Workaround: Restart the KMS service.

Creating multiple instances of HSM KMS on the same host and port causes an error upon delete

Creating a KMS role instance on a host that previously hosted a KMS role instance in the same role group that had its data directories deleted results in errors when attempting to run Hadoop `key delete` operations.

Affected Version(s): 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-4992

Workaround: This workaround requires the assistance of Cloudera support; request assistance with issue KT-4992

Incorrect status for "Restart stale services" step in HDFS encryption wizard post-service installation

There are times when completion of the HDFS Encryption Wizard does not show an active "Restart stale services and redeploy client configuration" link.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-4987

Workaround: Refresh the page and the link should become active.

The encryption wizard continues to fail if there is a failure during initial configuration run

The encryption wizard continues to fail if there was a failure during the initial run configuring HSM KMS.

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-4909

Workaround: Open Cloudera Manager in another browser tab, and manually stop the installed KMS by clicking the arrow next to the KMS and selecting **Stop**. Then retry the installation in the new tab after correcting the cause of the install failure.

Before installing the Thales backed HSM KMS, you must add the KMS user to the `nfast` group

After installation of the Thales HSM client, and before installing Navigator HSM KMS backed by Thales HSM, you must add the KMS user to the `nfast` group..

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-4618

Workaround: Run the following command to manually add the KMS user to the `nfast` group:
`usermod -a -G nfast kms`

Known Issues in Cloudera Navigator Encrypt 6.2.0

Navigator Encrypt cannot create an ACL when Key Trustee Server is down

Navigator Encrypt cannot create new ACLs when the Key Trustee Server is down. Navigator Encrypt will attempt to verify the master key with the Key Trustee Server when adding ACLs, even if the master key should already have been cached on the local system. If it can't communicate with the Key Trustee Server, the add ACL request will fail.

Affected Version: 6.1.0, 6.2.0

Cloudera Bug: KT-6390

Workaround: Make sure the Key Trustee Server is running before making modifications to Navigator Encrypt ACLs.

Issue with `navencrypt-mount service` status message

Affected Version: 6.0.0, 6.1.0, 6.2.0

Cloudera Bug: KT-6309

On RHEL 7, the `service navencrypt-mount stop` command might return a successful exit status message, even if there was a problem stopping Navigator Encrypt. This is not an issue with the `navencrypt-mount service` command; rather, it is a problem with the message output.

You can verify that `navencrypt-mount` stopped successfully by checking for the presence of the `navencryptfs` module in the `lsmod` output:

```
# lsmod | grep navencrypt
navencryptfs 101407 0
```

Alternatively, you can verify that the `navencrypt` mount points successfully dismounted by checking the output of the `df` or `mount` commands.

Workaround: None.

Cloudera Navigator 6.1.x Encryption Release Notes

To view release notes for the encryption components of specific Cloudera Navigator 6.1.x releases, see the following:

[Cloudera Navigator 6.1.1 Encryption Release Notes](#)

No Cloudera Navigator Encryption products were updated or released for 6.1.1.

[New Features in Cloudera Navigator 6.1.1 Encryption](#)

No Cloudera Navigator Encryption products were released in 6.1.1.

[Issues Fixed in Cloudera Navigator 6.1.1 Encryption](#)

No Cloudera Navigator Encryption products were released in 6.1.1.

[Known Issues in Cloudera Navigator 6.1.1 Encryption](#)

No Cloudera Navigator Encryption products were released in 6.1.1.

[Cloudera Navigator 6.1.0 Encryption Release Notes](#)

The following topics describe new features, fixed issues, incompatible changes, and known issues for the encryption components of Cloudera Navigator 6.1.0:

[New Features in Cloudera Navigator 6.1.0 Encryption](#)

See below for new features in the encryption components of Cloudera Navigator 6.1.0, grouped by component:

[New Features in Cloudera Navigator Key Trustee Server 6.1.0](#)

This release of Cloudera Navigator Key Trustee Server provides the following new functionality:

- There are no notable new features in this release of Cloudera Navigator Key Trustee Server.

New Features in Cloudera Navigator Key HSM 6.1.0

This release of Cloudera Navigator Key HSM provides the following new functionality:

- You can now use the following commands to stop the Key HSM service: `service keyhsm stop` and `keyhsm stop`. Previously, you could use the `shutdown` option, which does not match Unix service conventions.
- Key HSM now supports AWS CloudHSM.

New Features in Cloudera Navigator Key Trustee KMS 6.1.0

This release of Cloudera Navigator Key Trustee KMS provides the following new functionality:

- There are no notable new features in this release of Cloudera Navigator Key Trustee KMS.

New Features in Cloudera Navigator HSM KMS 6.1.0

This release of Cloudera Navigator HSM KMS provides the following new functionality:

- There are no notable new features in this release of Cloudera Navigator HSM KMS.

New Features in Cloudera Navigator Encrypt 6.1.0

This release of Cloudera Navigator Encrypt provides the following new functionality:

- For configurations where a device name was used to configure a mount point, and you wish to convert to a UUID, you have the option to use the UUID conversion utility (`navencrypt-prepare --convert-uuid`), which converts existing mount points from using the device name to using the UUID. See [Converting from Device Names to UUIDs for Encrypted Devices](#).

Issues Fixed in Cloudera Navigator 6.1.0 Encryption

See below for issues fixed in the encryption components of Cloudera Navigator 6.1.0:

Issues Fixed in Navigator Key Trustee KMS 6.1.0

New Key Trustee KMS failed after being added to an environment that previously had a single Key Trustee KMS instance

When adding a new Navigator Key Trustee KMS instance to an environment that previously only had a single Key Trustee KMS instance, the new Key Trustee KMS periodically failed to start and returned the following message:

"Unable to verify private key match between KMS hosts. If the system has been recently upgraded, DO NOT TAKE FURTHER ACTION and contact your support representative as soon as possible. If this is a new installation, verify private key files have been synced between all KMS hosts. Aborting to prevent data inconsistency."

Cloudera Issue: KT-6231

CDH upgrade failure

When upgrading to Key Trustee KMS 6.0.0 from Key Trustee KMS 5.14.0 or lower, *and* performing a rolling restart (instead of a full restart), the first Key Trustee KMS instance to restart may fail to come up and present the error: "Unable to verify private key match between KMS hosts. If the system has been recently upgraded, DO NOT TAKE FURTHER ACTION and contact your support representative as soon as possible. If this is a new installation, verify private key files have been synced between all KMS hosts. Aborting to prevent data inconsistency."

Cloudera Bug: KT-6547

Issues Fixed in Navigator Key HSM 6.1.0

Key HSM Luna setup not showing the correct login status

When running the `keyhsm setup luna` command, you are prompted for the Luna HSM slot number and login password. Key HSM then attempts to log into the Luna HSM to verify these settings are correct. In some circumstances, the setup script reports that the login was successful, even if it failed.

Cloudera Issue: KT-6623

Too many keys on Luna HSM causes Key HSM startup to fail

If there are too many keys on the Luna HSM, Key HSM startup will fail with a Java core dump because it times out querying the keys.

Cloudera Issue: KT-6129

Issues Fixed in Navigator Encrypt 6.1.0

Navigator Encrypt-related packages should be downgraded with the Navigator Encrypt package

The `navencrypt downgrade` command only downgraded the `navencrypt` package. It did not downgrade the associated `navencrypt-kernel-module` and `libkeytrustee` packages.

Cloudera Issue: KT-6381

When a mount point is added Navigator Encrypt updates configuration files before the action completes

The `navencrypt-prepare` command sometimes performed updates to the `/etc/navencrypt/control` and `/etc/navencrypt/ztab` files before the command completed. In such cases, if there was an error with the mounting or unmounting of the `navencrypt` mount point, then the updated `control` and `ztab` files did not accurately reflect which mount points existed.

Cloudera Issue: KT-6383

Navigator Encrypt will not build on RHEL kernel 3.10.0-862.14.4

The Navigator Encrypt kernel module will not build on RHEL kernel 3.10.0-862.14.4. This impacts new installations, and existing installations that are upgrading to kernel 3.10.0-862.14.4. This issue prevents the `navencrypt-mount` service from running and Navigator Encrypt mount points from being accessible.

Cloudera Issue: KT-6677

Upgrade from Navigator Encrypt 3.x to 6.0.0 does not trigger a `navencryptfs` recompile

After upgrading from Navigator Encrypt 3.x to Navigator Encrypt 6.0.0, the kernel module may not be rebuilt, even if the upgrade and installation commands indicate that it was built successfully.

Cloudera Bug: KT-6382

Known Issues in Cloudera Navigator 6.1.0 Encryption

The following sections describes known issues in the encryption components of Cloudera Navigator 6.1.0, grouped by component:

Known Issues in Cloudera Navigator Key Trustee Server 6.1.0



Warning:

Interrupting deposit migration from Key Trustee Server to Key HSM can result in lost data

Workaround: Do not interrupt deposit migration to Key HSM.

Additional Key Trustee Server process appears after key creation when passive database is stopped

If a key is created while the passive Key Trustee Server database is down, the key creation will fail with the message, "Database write timed out." In this case, even after the passive database comes up, a hanging Key Trustee Server

process thread may remain on the system attempting to complete the write. To view which Key Trustee Server processes are running, enter:

```
ps -ef | grep keytrustee | grep -v postgres
```

In normal operations there should be only one Key Trustee Server process running.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6684

Workaround: These extra Key Trustee Server processes do not cause any errors with the Key Trustee Server, but they will not be cleaned up properly when the Key Trustee Server is shut down. To fully shut down the Key Trustee Server when there are extra processes running, stop the Key Trustee Server service, and then kill any remaining processes.

Key Trustee Server active database setup fails when command line configuration specifies non-default database port

If the Key Trustee Server is configured from the command line to use a non-default database port (the default port is 11381), then when the Key Trustee Server service is added to Cloudera Manager, the first database startup fails.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6238

Workaround:

1. Log in to the Key Trustee Server and manually stop/start the databases:

```
service keytrustee-db stop
```

Make sure that the `postmaster.pid` file, which is located in the database directory, no longer exists. If necessary, replace `/var/lib/keytrustee/db` in the following command with the appropriate database directory for your system:

```
# ls /var/lib/keytrustee/db/postmaster.pid
```

If `postmaster.pid` has not been cleaned up, then use the `pg_ctl` utility to stop the database directly:

```
# pg_ctl stop
```

2. Return to the Cloudera Manager home page where the Key Trustee Server service is listed.
3. Go into the Key Trustee Server service configuration and for **Key Trustee Server Database Port**, specify the port that was configured during the command line configuration.
4. Redeploy the Key Trustee Server configuration and restart the service.

Key Trustee KMS cannot connect to Key Trustee Server using TLS versions other than 1.0 on JDK 7

If you have configured Key Trustee Server to use a TLS version other than 1.0, Key Trustee KMS fails to connect to Key Trustee Server, and key operations fail when using JDK 7.

Workaround: Use TLS version 1.0 only, or JDK 8.

Key Trustee Server cannot use TLS version 1.2 on RHEL 6

Configuring Key Trustee Server to use TLS version 1.2 causes Key Trustee Server to be unable to start.

Workaround: Use your operating system package manager to upgrade the `pyOpenSSL` package to version 1.4 or higher, or do not configure Key Trustee Server to use TLS version 1.2.

Key Trustee Server PKCS8 private key cannot communicate with Key HSM

If its private key is in PKCS8 format, Key Trustee Server cannot communicate with Key HSM.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-3172

Workaround: Convert the Key Trustee Server private key to raw RSA format.

Known Issues in Cloudera Navigator Key HSM 6.1.0

Roll key command throws an exception and cannot retrieve metadata for key

When using Key Trustee KMS with Key Trustee Server and Key HSM (backed by an HSM device), if there is significant (> 15 ms ping time) network latency between the Key Trustee Server and the HSM device, then EDEK generation errors can occur during the roll key operation. These errors manifest in the KMS log as errors on the `generateEncryptedKey` operation. The KMS will recover from these errors on its own, but they may represent a nuisance to the operator.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-5646

Workaround: When these errors occur, you can use the `hadoop key list -metadata` command to confirm whether or not the key roll was successful, despite the error condition.

KeySecure HSM not supported

The KeySecure HSM is not supported in this release.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6001

Workaround: None.

Too many keys on Luna HSM causes Key HSM startup to fail

If there are too many keys on the Luna HSM, Key HSM startup will fail with a Java core dump because it times out querying the keys.

Affected Version: 6.0.0

Cloudera Bug: KT-6129

Fixed in Version: 6.1.0

Workaround: Increase the value in the `keyhsm.countdown.time` property in `application.properties` (the default is 45 seconds) until Key HSM starts successfully.

Key HSM Luna setup not showing the correct login status

When running the `keyhsm setup luna` command, you are prompted for the Luna HSM slot number and login password. Key HSM then attempts to log into the Luna HSM to verify these settings are correct. In some circumstances, the setup script reports that the login was successful, even if it failed.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6623

Workaround: Any incorrect settings will cause the Key HSM service to throw an exception upon startup and exit. If the Key HSM service does not start correctly, check the log for the message: "Unable to sign into Luna HSM server. Please rerun application with 'setup' option to configure password." If this message appears, re-run the `keyhsm setup luna` command, and enter the correct slot number and login password.

The `keyhsm trust` command fails

When performing setup of Key HSM, the `ktadmin keyhsm --server http://server:port --trust` command may fail with the following message: "Unable to connect to Key HSM server at this address. Is the server running, and

is this KeyTrustee instance trusted (by running `keyhsm trust`)?" This failure can occur even if you have already successfully executed the `keyhsm trust` command.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6131

Workaround: Re-execute the `keyhsm trust` command, and then retry the `ktadmin keyhsm` command.

Upgrading Key HSM removes init script and binary

Upgrading Key HSM from 1.4.x to 1.5.x and higher removes the Key HSM init script and `/usr/bin/keyhsm` binary.

Workaround: Reinstall Key HSM:

```
sudo yum reinstall keytrustee-keyhsm
```

Key HSM cannot trust Key Trustee Server certificate if it has extended attributes

Key HSM cannot trust the Key Trustee Server certificate if it has extended attributes, and therefore cannot integrate with Key Trustee Server.

Workaround: Import the Key Trustee Server certificate to the Key HSM trust store using Java `keytool` instead of the `keyhsm trust` command.

Known Issues in Cloudera Navigator Key Trustee KMS 6.1.0

CDH upgrade failure

When upgrading to Key Trustee KMS 6.0.0 from Key Trustee KMS 5.14.0 or lower, *and* performing a rolling restart (instead of a full restart), the first Key Trustee KMS instance to restart may fail to come up and present the error: "Unable to verify private key match between KMS hosts. If the system has been recently upgraded, DO NOT TAKE FURTHER ACTION and contact your support representative as soon as possible. If this is a new installation, verify private key files have been synced between all KMS hosts. Aborting to prevent data inconsistency."

Affected Versions: 6.0.0

Cloudera Bug: KT-6547

Fixed Version: 6.1.0

Workaround: If possible, perform a full restart instead of a rolling restart.

If you cannot execute a full restart, then add the following line to the `/var/lib/kms-keytrustee/keytrustee/.keytrustee/keytrustee.conf` file on all Key Trustee KMS instances, and then restart the Key Trustee KMS that failed:

```
"FINGERPRINT_VALIDATED": "True"
```

New Key Trustee KMS may fail after being added to an environment that previously had a single Key Trustee KMS instance

When adding a new Navigator Key Trustee KMS instance to an environment that previously only had a single Key Trustee KMS instance, the new Key Trustee KMS may fail to start and return the following message:

"Unable to verify private key match between KMS hosts. If the system has been recently upgraded, DO NOT TAKE FURTHER ACTION and contact your support representative as soon as possible. If this is a new installation, verify private key files have been synced between all KMS hosts. Aborting to prevent data inconsistency."

This message correctly appears if GPG private keys have not been synced across all Key Trustee KMS instances. However, it may erroneously appear when the GPG private keys have been synced, but the original Key Trustee KMS instance has not been restarted to pick up the new configuration.

If you encounter this error message and have either recently upgraded the Key Trustee KMS, or have installed a new Key Trustee KMS service running in HA mode, refer to [Key Trustee KMS Encryption Issues](#) for troubleshooting steps.

Affected Version: 6.0.0

Fixed Version: 6.1.0

Cloudera Bug: KT-6231

Workaround: Restart the original Key Trustee KMS instance, and then start the new Key Trustee KMS instance.

The Key Trustee KMS service fails to start if the Trust Store is configured without also configuring the Keystore

If you configure the Key Trustee KMS service **Key Management Server Proxy TLS/SSL Certificate Trust Store File** and **Key Management Server Proxy TLS/SSL Certificate Trust Store Password** parameters without also configuring the **Key Management Server Proxy TLS/SSL Server JKS Keystore File Location** and **Key Management Server Proxy TLS/SSL Server JKS Keystore File Password** parameters, the Key Trustee KMS service does not start.

Workaround: Configure all Trust Store and Keystore parameters.

Key Trustee KMS backup script fails if PostgreSQL versions lower than 9.3 are installed

If PostgreSQL versions lower than 9.3 are installed on the Key Trustee KMS host, the `ktbackup.sh` script fails with an error similar to the following:

```
pg_dump: server version: 9.3.11; pg_dump version: 9.2.14
pg_dump: aborting because of server version mismatch
```

Workaround: Uninstall the lower PostgreSQL version.

Known Issues in Cloudera Navigator HSM KMS 6.1.0

Encryption zone key is not deleted after migrating from Key Trustee KMS to HSM KMS

After migrating keys from the Key Trustee KMS to the HSM KMS, the HSM KMS service should be restarted. Until it is restarted, any keys that are deleted after the migration may still be cached. If a deleted key is cached, then the data encrypted with that key can still be accessed even though the key has been deleted.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6434

Workaround: Restart the HSM KMS service after the key migration is complete.

KT KMS migration to HSM KMS fails if a key is not found on HSM

When using Key Trustee KMS with Key Trustee Server and Key HSM (backed by an HSM device), if a key version is deleted on the HSM device directly without also deleting and purging that key version on the Key Trustee KMS, then attempts to migrate from the KT KMS to the HSM KMS will fail.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-5671

Workaround: None.

HSM KMS proxy fails to start during key migration

When migrating keys from the Key Trustee KMS to the HSM KMS, the HSM KMS Proxy may fail to start and return a fatal error.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6431

Workaround: Navigate to the **Additional Java Configuration Options for KMS** setting in the HSM KMS configuration, and ensure that the HSM KMS truststore matches the truststore used by the Key Trustee KMS:

```
-Djavax.net.ssl.trustStore=/path/to/truststore
```

You can remove this option after completing the migration.

HSM KMS Thales Proxy role fails to start with non-default Thales HSM Server Port

Port 9001 is used by Cloudera Manager services, and it is also the default privileged port for the Thales HSM KMS. If you use port 9001 for the Thales HSM KMS, it will prevent the CM 6.0.0 upgrade from completing successfully.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6403

Workaround: If the Thales HSM KMS already exists, then before upgrading to Cloudera Manager 6.0.0, you must change the privileged Thales HSM KMS port; the recommended port is 11501. The non-privileged port default is 9000, and does not need to be changed.

If you are newly installing the Thales HSM KMS on a 6.0.0 system, then you must set the port to a non-default value before adding the HSM KMS backed by Thales service in Cloudera Manager.

To change the privileged port, log into the Thales HSM KMS machine(s), and run the following commands:

```
# sudo /opt/nfast/bin/config-serverstartup --enable-tcp --enable-privileged-tcp
--privport=11501
[server_settings] change successful; you must restart the hardserver for this to take
effect
# sudo /opt/nfast/sbin/init.d-ncipher restart
-- Running shutdown script 90ncsnmpd

-- Running shutdown script 60raserv

...

'ncsnmpd' server now running
```

After successfully running the commands, restart the Thales HSM KMS.

Key store key password specified in Cloudera Manager is not properly used by HSM KMS Service

If the Navigator HSM KMS Proxy TLS/SSL Server JKS Keystore File Password and the Navigator HSM KMS Proxy TLS/SSL Server JKS Keystore Key Password are not both specified or differ from each other, then the HSM KMS inter-node handshake fails and HSM KMS High Availability is not configured.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6020

Workaround: Use the same password for the keystore file and the keystore key file.

Timeout error during encryption zone key creation

There are situations where the key cache is synchronously populated to capacity during the create encryption zone operation. The expected behavior is that the key cache is synchronously populated only to the low watermark level (the rest of the keys should be created asynchronously).

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-5296

Workaround: On the HSM KMS, in the field **HSM KMS Proxy Advanced Configuration Snippet (Safety Valve)** for kms-site.xml:

- hadoop.security.kms.encrypted.key.cache.low.watermark .05
- hadoop.security.kms.encrypted.key.cache.size 30

On the HDFS, in the field **HDFS Cluster-wide Advanced Configuration Snippet (Safety Valve)** for `core-site.xml`:

- `hadoop.security.kms.client.encrypted.key.cache.size` 30
- `hadoop.security.kms.client.encrypted.key.cache.low-watermark` .05

[HSM KMS Luna may need to be restarted if inactive for extended period](#)

If Hadoop key operations return `com.safenetinc.luna.exception.LunaCryptokiException` after the KMS has been running without activity for an extended period time, the Luna session may have been dropped.

Affected Version(s): 6.0.0, 6.1.0

Cloudera Bug: KT-5018

Workaround: Restart the KMS service.

[Creating multiple instances of HSM KMS on the same host and port causes an error upon delete](#)

Creating a KMS role instance on a host that previously hosted a KMS role instance in the same role group that had its data directories deleted results in errors when attempting to run Hadoop `key delete` operations.

Affected Version(s): 6.0.0, 6.1.0

Cloudera Bug: KT-4992

Workaround: This workaround requires the assistance of Cloudera support; request assistance with issue KT-4992

[Incorrect status for "Restart stale services" step in HDFS encryption wizard post-service installation](#)

There are times when completion of the HDFS Encryption Wizard does not show an active "Restart stale services and redeploy client configuration" link.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-4987

Workaround: Refresh the page and the link should become active.

[The encryption wizard continues to fail if there is a failure during initial configuration run](#)

The encryption wizard continues to fail if there was a failure during the initial run configuring HSM KMS.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-4909

Workaround: Open Cloudera Manager in another browser tab, and manually stop the installed KMS by clicking the arrow next to the KMS and selecting **Stop**. Then retry the installation in the new tab after correcting the cause of the install failure.

[Before installing the Thales backed HSM KMS, you must add the KMS user to the `nfast` group](#)

After installation of the Thales HSM client, and before installing Navigator HSM KMS backed by Thales HSM, you must add the KMS user to the `nfast` group..

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-4618

Workaround: Run the following command to manually add the KMS user to the `nfast` group:
`usermod -a -G nfast kms`

*Known Issues in Cloudera Navigator Encrypt 6.1.0***Navigator Encrypt cannot create an ACL when Key Trustee Server is down**

Navigator Encrypt cannot create new ACLs when the Key Trustee Server is down. Navigator Encrypt will attempt to verify the master key with the Key Trustee Server when adding ACLs, even if the master key should already have been cached on the local system. If it can't communicate with the Key Trustee Server, the add ACL request will fail.

Affected Version: 6.1.0

Cloudera Bug: KT-6390

Workaround: Make sure the Key Trustee Server is running before making modifications to Navigator Encrypt ACLs.

Navigator Encrypt-related packages should be downgraded with the Navigator Encrypt package

The `navencrypt downgrade` command will only downgrade the `navencrypt` package. It will not downgrade the associated `navencrypt-kernel-module` and `libkeytrustee` packages.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6381

Workaround: To fully downgrade Navigator Encrypt, manually downgrade all of the associated Navigator Encrypt packages (in the order listed):

1. `navencrypt`
2. `navencrypt-kernel-module`
3. `libkeytrustee`

Upgrade from Navigator Encrypt 3.x to 6.0.0 does not trigger a `navencryptfs` recompile

After upgrading from Navigator Encrypt 3.x to Navigator Encrypt 6.0.0, the kernel module may not be rebuilt, even if the upgrade and installation commands indicate that it was built successfully.

Affected Version: 6.0.0

Cloudera Bug: KT-6382

Fixed in Version: 6.1.0

Workaround: If the version currently loaded is not the desired version, use the following commands to update it. In this case, you must manually load the updated kernel module.

To identify which version of the kernel module is being used, look for the currently loaded version in the `dmesg` output (in this case, the output reveals that kernel module version was not rebuilt):

```
navencrypt: time=1531428589 level=INFO app="kernel" Cloudera navencryptfs v3.14.0-405 loaded
```

For RHEL/UBUNTU:

```
service navencrypt-mount stop
navencrypt-module-setup
service navencrypt-mount start
```

For SLES:

```
service navencrypt-mount stop
rmmod navencryptfs
modprobe -v navencryptfs
service navencrypt-mount start
```

When a mount point is added Navigator Encrypt updates configuration files before the action completes

The `navencrypt-prepare` command sometimes performs updates to the `/etc/navencrypt/control` and `/etc/navencrypt/ztab` files before the command has completed. In such cases, if there is an error with the mounting or unmounting of the `navencrypt` mount point, then the updated `control` and `ztab` files will not accurately reflect which mount points exist. Do *not* manually change these files without having a known working backup.

Affected Version: 6.0.0

Cloudera Bug: KT-6383

Fixed in Version: 6.1.0

Workaround: None.

Issue with `navencrypt-mount service` status message

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6309

On RHEL 7, the `service navencrypt-mount stop` command might return a successful exit status message, even if there was a problem stopping Navigator Encrypt. This is not an issue with the `navencrypt-mount service` command; rather, it is a problem with the message output.

You can verify that `navencrypt-mount` stopped successfully by checking for the presence of the `navencryptfs` module in the `lsmod` output:

```
# lsmod | grep navencrypt
navencryptfs 101407 0
```

Alternatively, you can verify that the `navencrypt` mount points successfully dismounted by checking the output of the `df` or `mount` commands.

Workaround: None.

Cloudera Navigator 6.0.x Encryption Release Notes

To view release notes for the encryption components of specific Cloudera Navigator 6.0.x releases, see the following:

[Cloudera Navigator 6.0.1 Encryption Release Notes](#)

No Cloudera Navigator Encryption products were updated or released for 6.0.1.

[New Features in Cloudera Navigator 6.0.1 Encryption](#)

No Cloudera Navigator Encryption products were released in 6.0.1.

[Issues Fixed in Cloudera Navigator 6.0.1 Encryption](#)

No Cloudera Navigator Encryption products were released in 6.0.1.

[Known Issues in Cloudera Navigator 6.0.1 Encryption](#)

No Cloudera Navigator Encryption products were released in 6.0.1.

[Cloudera Navigator 6.0.0 Encryption Release Notes](#)

The following topics describe new features, fixed issues, incompatible changes, and known issues for the encryption components of Cloudera Navigator 6.0.0:

[New Features in Cloudera Navigator 6.0.0 Encryption](#)

See below for new features in the encryption components of Cloudera Navigator 6.0.0, grouped by component:

[New Features in Cloudera Navigator Key Trustee Server 6.0.0](#)

This release of Cloudera Navigator Key Trustee Server provides the following new functionality:

- There are no notable new features in this release of Cloudera Navigator Key Trustee Server.

New Features in Cloudera Navigator Key HSM 6.0.0

This release of Cloudera Navigator Key HSM provides the following new functionality:

- There are no notable new features in this release of Cloudera Navigator Key HSM.

New Features in Cloudera Navigator Key Trustee KMS 6.0.0

This release of Cloudera Navigator Key Trustee KMS provides the following new functionality:

- There are no notable new features in this release of Cloudera Navigator Key Trustee KMS.

New Features in Cloudera Navigator HSM KMS 6.0.0

This release of Cloudera Navigator HSM KMS provides the following new functionality:

- There are no notable new features in this release of Cloudera Navigator HSM KMS.

New Features in Cloudera Navigator Encrypt 6.0.0

This release of Cloudera Navigator Encrypt provides the following new functionality:

- When changing the master key, there is a new option for the `navencrypt key --change` command: the `--rsa-oaep` parameter updates the master key to use RSA OAEP padding. While this is optional, it is a best practice to use the new, more secure padding. See the Navigator Encrypt Upgrade documentation for more details.
- Support for RHEL/CentOS 7.5.

Issues Fixed in Cloudera Navigator 6.0.0 Encryption

See below for issues fixed in the encryption components of Cloudera Navigator 6.0.0, grouped by component:

Issues Fixed in Cloudera Navigator Key Trustee Server 6.0.0

There are no notable fixed issues in this release of Cloudera Navigator Key Trustee Server.

Issues Fixed in Cloudera Navigator Key HSM 6.0.0

There are no notable fixed issues in this release of Cloudera Navigator Key HSM.

Issues Fixed in Cloudera Navigator Key Trustee KMS 6.0.0

Validation fails if hostname command returns shortname

If the `hostname` command on the OS returns `shortname`, and the `core-site.xml` of the KMS process has a `hadoop.security.key.provider.path` with a fully qualified domain name (FQDN), then the `znodes` will be created with the `shortname`. Consequently, when KMS 1 checks the fingerprint of KMS 2, it will expect the FQDN as the `znode`, and fail the validation.

Cloudera Issue: KT-6412

Issues Fixed in Cloudera Navigator HSM KMS 6.0.0

There are no notable fixed issues in this release of Cloudera Navigator HSM KMS.

New Features in Cloudera Navigator Encrypt 6.0.0

There are no notable fixed issues in this release of Cloudera Navigator Encrypt.

Known Issues in Cloudera Navigator 6.0.0 Encryption

The following sections describes known issues in the encryption components of Cloudera Navigator 6.0, grouped by component:

Known Issues in Cloudera Navigator Key Trustee Server 6.0.0

**Warning:**

Interrupting deposit migration from Key Trustee Server to Key HSM can result in lost data

Workaround: Do not interrupt deposit migration to Key HSM.

Key Trustee Server active database setup fails when command line configuration specifies non-default database port

If the Key Trustee Server is configured from the command line to use a non-default database port (the default port is 11381), then when the Key Trustee Server service is added to Cloudera Manager, the first database startup fails.

Affected Version: 6.0.0

Cloudera Bug: KT-6238

Workaround:

1. Log in to the Key Trustee Server and manually stop/start the databases:

```
service keytrustee-db stop
```

Make sure that the `postmaster.pid` file, which is located in the database directory, no longer exists. If necessary, replace `/var/lib/keytrustee/db` in the following command with the appropriate database directory for your system:

```
# ls /var/lib/keytrustee/db/postmaster.pid
```

If `postmaster.pid` has not been cleaned up, then use the `pg_ctl` utility to stop the database directly:

```
# pg_ctl stop
```

2. Return to the Cloudera Manager home page where the Key Trustee Server service is listed.
3. Go into the Key Trustee Server service configuration and for **Key Trustee Server Database Port**, specify the port that was configured during the command line configuration.
4. Redeploy the Key Trustee Server configuration and restart the service.

Key Trustee KMS cannot connect to Key Trustee Server using TLS versions other than 1.0 on JDK 7

If you have configured Key Trustee Server to use a TLS version other than 1.0, Key Trustee KMS fails to connect to Key Trustee Server, and key operations fail when using JDK 7.

Workaround: Use TLS version 1.0 only, or JDK 8.

Key Trustee Server cannot use TLS version 1.2 on RHEL 6

Configuring Key Trustee Server to use TLS version 1.2 causes Key Trustee Server to be unable to start.

Workaround: Use your operating system package manager to upgrade the `pyOpenSSL` package to version 1.4 or higher, or do not configure Key Trustee Server to use TLS version 1.2.

Key Trustee Server PKCS8 private key cannot communicate with Key HSM

If its private key is in PKCS8 format, Key Trustee Server cannot communicate with Key HSM.

Affected Version: 6.0.0

Cloudera Bug: KT-3172

Workaround: Convert the Key Trustee Server private key to raw RSA format.

Known Issues in Cloudera Navigator Key HSM 6.0.0

Roll key command throws an exception and cannot retrieve metadata for key

When using Key Trustee KMS with Key Trustee Server and Key HSM (backed by an HSM device), if there is significant (> 15 ms ping time) network latency between the Key Trustee Server and the HSM device, then EDEK generation errors can occur during the roll key operation. These errors manifest in the KMS log as errors on the `generateEncryptedKey` operation. The KMS will recover from these errors on its own, but they may represent a nuisance to the operator.

Affected Version: 6.0.0

Cloudera Bug: KT-5646

Workaround: When these errors occur, you can use the `hadoop key list -metadata` command to confirm whether or not the key roll was successful, despite the error condition.

KeySecure HSM not supported

The KeySecure HSM is not supported in this release.

Affected Version: 6.0.0

Cloudera Bug: KT-6001

Workaround: None.

Too many keys on Luna HSM causes Key HSM startup to fail

If there are too many keys on the Luna HSM, Key HSM startup will fail with a Java core dump because it times out querying the keys.

Affected Version: 6.0.0

Cloudera Bug: KT-6129

Fixed in Version: 6.1.0

Workaround: Increase the value in the `keyhsm.countdown.time` property in `application.properties` (the default is 45 seconds) until Key HSM starts successfully.

Key HSM Luna setup not showing the correct login status

When running the `keyhsm setup luna` command, you are prompted for the Luna HSM slot number and login password. Key HSM then attempts to log into the Luna HSM to verify these settings are correct. In some circumstances, the setup script reports that the login was successful, even if it failed.

Affected Version: 6.0.0

Cloudera Bug: KT-6623

Workaround: Any incorrect settings will cause the Key HSM service to throw an exception upon startup and exit. If the Key HSM service does not start correctly, check the log for the message: "Unable to sign into Luna HSM server. Please rerun application with 'setup' option to configure password." If this message appears, re-run the `keyhsm setup luna` command, and enter the correct slot number and login password.

The `keyhsm trust` command fails

When performing setup of Key HSM, the `ktadmin keyhsm --server http://server:port --trust` command may fail with the following message: "Unable to connect to Key HSM server at this address. Is the server running, and is this KeyTrustee instance trusted (by running `keyhsm trust`)?" This failure can occur even if you have already successfully executed the `keyhsm trust` command.

Affected Version: 6.0.0

Cloudera Bug: KT-6131

Workaround: Re-execute the `keyhsm trust` command, and then retry the `ktadmin keyhsm` command.

Upgrading Key HSM removes init script and binary

Upgrading Key HSM from 1.4.x to 1.5.x and higher removes the Key HSM init script and `/usr/bin/keyhsm` binary.

Workaround: Reinstall Key HSM:

```
sudo yum reinstall keytrustee-keyhsm
```

Key HSM cannot trust Key Trustee Server certificate if it has extended attributes

Key HSM cannot trust the Key Trustee Server certificate if it has extended attributes, and therefore cannot integrate with Key Trustee Server.

Workaround: Import the Key Trustee Server certificate to the Key HSM trust store using Java `keytool` instead of the `keyhsm trust` command.

Known Issues in Cloudera Navigator Key Trustee KMS 6.0.0

CDH upgrade failure

When upgrading to Key Trustee KMS 6.0.0 from Key Trustee KMS 5.14.0 or lower, *and* performing a rolling restart (instead of a full restart), the first Key Trustee KMS instance to restart may fail to come up and present the error: "Unable to verify private key match between KMS hosts. If the system has been recently upgraded, DO NOT TAKE FURTHER ACTION and contact your support representative as soon as possible. If this is a new installation, verify private key files have been synched between all KMS hosts. Aborting to prevent data inconsistency."

Affected Versions: 6.0.0

Cloudera Bug: KT-6547

Workaround: If possible, perform a full restart instead of a rolling restart.

If you cannot execute a full restart, then add the following line to the `/var/lib/kms-keytrustee/keytrustee/.keytrustee/keytrustee.conf` file on all Key Trustee KMS instances, and then restart the Key Trustee KMS that failed:

```
"FINGERPRINT_VALIDATED": "True"
```

New Key Trustee KMS may fail after being added to an environment that previously had a single Key Trustee KMS instance

When adding a new Navigator Key Trustee KMS instance to an environment that previously only had a single Key Trustee KMS instance, the new Key Trustee KMS may fail to start and return the following message:

"Unable to verify private key match between KMS hosts. If the system has been recently upgraded, DO NOT TAKE FURTHER ACTION and contact your support representative as soon as possible. If this is a new installation, verify private key files have been synched between all KMS hosts. Aborting to prevent data inconsistency."

This message correctly appears if GPG private keys have not been synched across all Key Trustee KMS instances. However, it may erroneously appear when the GPG private keys have been synched, but the original Key Trustee KMS instance has not been restarted to pick up the new configuration.

If you encounter this error message and have either recently upgraded the Key Trustee KMS, or have installed a new Key Trustee KMS service running in HA mode, refer to [Key Trustee KMS Encryption Issues](#) for troubleshooting steps.

Affected Version: 6.0.0

Cloudera Bug: KT-6231

Workaround: Restart the original Key Trustee KMS instance, and then start the new Key Trustee KMS instance.

The Key Trustee KMS service fails to start if the Trust Store is configured without also configuring the Keystore

If you configure the Key Trustee KMS service **Key Management Server Proxy TLS/SSL Certificate Trust Store File** and **Key Management Server Proxy TLS/SSL Certificate Trust Store Password** parameters without also configuring the **Key Management Server Proxy TLS/SSL Server JKS Keystore File Location** and **Key Management Server Proxy TLS/SSL Server JKS Keystore File Password** parameters, the Key Trustee KMS service does not start.

Workaround: Configure all Trust Store and Keystore parameters.

Key Trustee KMS backup script fails if PostgreSQL versions lower than 9.3 are installed

If PostgreSQL versions lower than 9.3 are installed on the Key Trustee KMS host, the `ktbackup.sh` script fails with an error similar to the following:

```
pg_dump: server version: 9.3.11; pg_dump version: 9.2.14
pg_dump: aborting because of server version mismatch
```

Workaround: Uninstall the lower PostgreSQL version.

Known Issues in Cloudera Navigator HSM KMS 6.0.0

Encryption zone key is not deleted after migrating from Key Trustee KMS to HSM KMS

After migrating keys from the Key Trustee KMS to the HSM KMS, the HSM KMS service should be restarted. Until it is restarted, any keys that are deleted after the migration may still be cached. If a deleted key is cached, then the data encrypted with that key can still be accessed even though the key has been deleted.

Affected Version: 6.0.0, 6.1.0

Cloudera Bug: KT-6434

Workaround: Restart the HSM KMS service after the key migration is complete.

KT KMS migration to HSM KMS fails if a key is not found on HSM

When using Key Trustee KMS with Key Trustee Server and Key HSM (backed by an HSM device), if a key version is deleted on the HSM device directly without also deleting and purging that key version on the Key Trustee KMS, then attempts to migrate from the KT KMS to the HSM KMS will fail.

Affected Version: 6.0.0

Cloudera Bug: KT-5671

Workaround: None.

HSM KMS proxy fails to start during key migration

When migrating keys from the Key Trustee KMS to the HSM KMS, the HSM KMS Proxy may fail to start and return a fatal error.

Affected Version: 6.0.0

Cloudera Bug: KT-6431

Workaround: Navigate to the **Additional Java Configuration Options for KMS** setting in the HSM KMS configuration, and ensure that the HSM KMS truststore matches the truststore used by the Key Trustee KMS:

```
-Djavax.net.ssl.trustStore=/path/to/truststore
```

You can remove this option after completing the migration.

HSM KMS Thales Proxy role fails to start with non-default Thales HSM Server Port

Port 9001 is used by Cloudera Manager services, and it is also the default privileged port for the Thales HSM KMS. If you use port 9001 for the Thales HSM KMS, it will prevent the CM 6.0.0 upgrade from completing successfully.

Affected Version: 6.0.0

Cloudera Bug: KT-6403

Workaround: If the Thales HSM KMS already exists, then before upgrading to Cloudera Manager 6.0.0, you must change the privileged Thales HSM KMS port; the recommended port is 11501. The non-privileged port default is 9000, and does not need to be changed.

If you are newly installing the Thales HSM KMS on a 6.0.0 system, then you must set the port to a non-default value before adding the HSM KMS backed by Thales service in Cloudera Manager.

To change the privileged port, log into the Thales HSM KMS machine(s), and run the following commands:

```
# sudo /opt/nfast/bin/config-serverstartup --enable-tcp --enable-privileged-tcp
--privport=11501
[server_settings] change successful; you must restart the hardserver for this to take
effect
# sudo /opt/nfast/sbin/init.d-ncipher restart
-- Running shutdown script 90ncsnmpd

-- Running shutdown script 60raserv

...

'ncsnmpd' server now running
```

After successfully running the commands, restart the Thales HSM KMS.

Key store key password specified in Cloudera Manager is not properly used by HSM KMS Service

If the Navigator HSM KMS Proxy TLS/SSL Server JKS Keystore File Password and the Navigator HSM KMS Proxy TLS/SSL Server JKS Keystore Key Password are not both specified or differ from each other, then the HSM KMS inter-node handshake fails and HSM KMS High Availability is not configured.

Affected Version: 6.0.0

Cloudera Bug: KT-6020

Workaround: Use the same password for the keystore file and the keystore key file.

Timeout error during encryption zone key creation

There are situations where the key cache is synchronously populated to capacity during the create encryption zone operation. The expected behavior is that the key cache is synchronously populated only to the low watermark level (the rest of the keys should be created asynchronously).

Affected Version: 6.0.0

Cloudera Bug: KT-5296

Workaround: On the HSM KMS, in the field **HSM KMS Proxy Advanced Configuration Snippet (Safety Valve)** for kms-site.xml:

- hadoop.security.kms.encrypted.key.cache.low.watermark .05
- hadoop.security.kms.encrypted.key.cache.size 30

On the HDFS, in the field **HDFS Cluster-wide Advanced Configuration Snippet (Safety Valve)** for core-site.xml:

- hadoop.security.kms.client.encrypted.key.cache.size 30
- hadoop.security.kms.client.encrypted.key.cache.low-watermark .05

HSM KMS Luna may need to be restarted if inactive for extended period

If Hadoop key operations return `com.safenetinc.luna.exception.LunaCryptokiException` after the KMS has been running without activity for an extended period time, the Luna session may have been dropped.

Affected Version(s): 6.0.0

Cloudera Bug: KT-5018

Workaround: Restart the KMS service.

[Creating multiple instances of HSM KMS on the same host and port causes an error upon delete](#)

Creating a KMS role instance on a host that previously hosted a KMS role instance in the same role group that had its data directories deleted results in errors when attempting to run Hadoop `key delete` operations.

Affected Version(s): 6.0.0

Cloudera Bug: KT-4992

Workaround: This workaround requires the assistance of Cloudera support; request assistance with issue KT-4992

[Incorrect status for "Restart stale services" step in HDFS encryption wizard post-service installation](#)

There are times when completion of the HDFS Encryption Wizard does not show an active "Restart stale services and redeploy client configuration" link.

Affected Version: 6.0.0

Cloudera Bug: KT-4987

Workaround: Refresh the page and the link should become active.

[The encryption wizard continues to fail if there is a failure during initial configuration run](#)

The encryption wizard continues to fail if there was a failure during the initial run configuring HSM KMS.

Affected Version: 6.0.0

Cloudera Bug: KT-4909

Workaround: Open Cloudera Manager in another browser tab, and manually stop the installed KMS by clicking the arrow next to the KMS and selecting **Stop**. Then retry the installation in the new tab after correcting the cause of the install failure.

[Before installing the Thales backed HSM KMS, you must add the KMS user to the `nfast` group](#)

After installation of the Thales HSM client, and before installing Navigator HSM KMS backed by Thales HSM, you must add the KMS user to the `nfast` group..

Affected Version: 6.0.0

Cloudera Bug: KT-4618

Workaround: Run the following command to manually add the KMS user to the `nfast` group:
`usermod -a -G nfast kms`

Known Issues in Cloudera Navigator Encrypt 6.0.0

[Navigator Encrypt-related packages should be downgraded with the Navigator Encrypt package](#)

The `navencrypt downgrade` command will only downgrade the `navencrypt` package. It will not downgrade the associated `navencrypt-kernel-module` and `libkeytrustee` packages.

Affected Version: 6.0.0

Cloudera Bug: KT-6381

Workaround: To fully downgrade Navigator Encrypt, manually downgrade all of the associated Navigator Encrypt packages (in the order listed):

1. `navencrypt`
2. `navencrypt-kernel-module`

3. libkeytrustee

Navigator Encrypt will not build on RHEL kernel 3.10.0-862.14.4

The Navigator Encrypt kernel module will not build on RHEL kernel 3.10.0-862.14.4. This impacts new installations, and existing installations that are upgrading to kernel 3.10.0-862.14.4. This issue prevents the `navencrypt-mount` service from running and Navigator Encrypt mount points from being accessible.

Affected Versions: 6.0.0

Fixed in Version: 6.1.0

Cloudera Bug: KT-6677

Workaround: Upgrade to Navigator Encrypt 6.1.0 before upgrading to RHEL kernel 3.10.0-862.14.4.

Upgrade from Navigator Encrypt 3.x to 6.0.0 does not trigger a `navencryptfs` recompile

After upgrading from Navigator Encrypt 3.x to Navigator Encrypt 6.0.0, the kernel module may not be rebuilt, even if the upgrade and installation commands indicate that it was built successfully.

Affected Version: 6.0.0

Cloudera Bug: KT-6382

Workaround: If the version currently loaded is not the desired version, use the following commands to update it. In this case, you must manually load the updated kernel module.

To identify which version of the kernel module is being used, look for the currently loaded version in the `dmesg` output (in this case, the output reveals that kernel module version was not rebuilt):

```
navencrypt: time=1531428589 level=INFO app="kernel" Cloudera navencryptfs v3.14.0-405 loaded
```

For RHEL/UBUNTU:

```
service navencrypt-mount stop
navencrypt-module-setup
service navencrypt-mount start
```

For SLES:

```
service navencrypt-mount stop
rmmod navencryptfs
modprobe -v navencryptfs
service navencrypt-mount start
```

When a mount point is added Navigator Encrypt updates configuration files before the action completes

The `navencrypt-prepare` command sometimes performs updates to the `/etc/navencrypt/control` and `/etc/navencrypt/ztab` files before the command has completed. In such cases, if there is an error with the mounting or unmounting of the `navencrypt` mount point, then the updated `control` and `ztab` files will not accurately reflect which mount points exist. Do *not* manually change these files without having a known working backup.

Affected Version: 6.0.0

Cloudera Bug: KT-6383

Workaround: None.

Issue with `navencrypt-mount` service status message

Affected Version: 6.0.0

Cloudera Bug: KT-6309

On RHEL 7, the `service navencrypt-mount stop` command might return a successful exit status message, even if there was a problem stopping Navigator Encrypt. This is not an issue with the `navencrypt-mount service` command; rather, it is a problem with the message output.

You can verify that `navencrypt-mount` stopped successfully by checking for the presence of the `navencryptfs` module in the `lsmod` output:

```
# lsmod | grep navencrypt
navencryptfs 101407 0
```

Alternatively, you can verify that the `navencrypt mount` points successfully dismounted by checking the output of the `df` or `mount` commands.

Workaround: None.

Deprecated Items

This page lists operating systems, Java versions, databases, platforms, CDH components and subcomponents, and product functionality that have been deprecated or removed.

Deprecated Items

A deprecated item is a feature, component, platform, or functionality that Cloudera is planning to remove in a future release. Cloudera supports items that are deprecated until they are removed, and the deprecation gives customers time to plan for removal.

The following table lists deprecated items:

- [Table 64: CDH Components, Subcomponents, and Product Functionality](#) on page 1459

Table 64: CDH Components, Subcomponents, and Product Functionality

| Item | Related Information | Release in Which Item Is Deprecated | Release in Which Support Is Removed |
|-----------------------|---|-------------------------------------|-------------------------------------|
| Activity Monitor | Activity Monitor is only used and deployed by Cloudera Manager when the MapReduce service (MRv1) is deployed. | 5.9.0 | 7.0.0 |
| Apache Crunch | Apache Crunch is deprecated, and will be removed in a future release. Cloudera recommends using Spark 2 instead. Additionally, as of CDH 6.0.0, Crunch is available only as Maven artifacts from the Cloudera Maven repository. For more information, see Apache Crunch Guide . | 6.0.0 | To be determined. |
| Continuous Scheduling | Continuous scheduling is only recommended for tiny clusters. On large clusters, continuous scheduling can cause the ResourceManager to appear unresponsive. | 6.3.3 | To be determined. |

| Item | Related Information | Release in Which Item Is Deprecated | Release in Which Support Is Removed |
|--|--|-------------------------------------|-------------------------------------|
| Hive CLI | About Hive | 5.0.0 | To be determined. |
| Kite Dataset API | Kite Dataset API is deprecated, and will be removed in a future release. | 6.0.0 | To be determined. |
| Kudu Flume sink configuration parameters | The <code>producer.skipMissingColumn</code> , <code>producer.skipBadColumnValue</code> , and <code>producer.warnUnmatchedRows</code> Kudu Flume sink configuration parameters have been deprecated in favor of <code>producer.missingColumnPolicy</code> , <code>producer.badColumnValuePolicy</code> , and <code>producer.unmatchedRowPolicy</code> respectively. | 6.1.0 | |
| Python 2.6 | Python 2.6, packaged with RHEL6, is deprecated. Key Trustee Server uses the utilities <code>ktadmin</code> and <code>keytrustee-orgtool</code> , which use the native version of Python that is packaged with the host OS. <ul style="list-style-type: none"> • Initializing Standalone Key Trustee Server • Managing Key Trustee Server Organizations | 6.0.0 | To be determined. |

Removed Items

A removed item is a feature, component, platform, or functionality that has been removed from the product and is no longer supported. Documentation for the feature, component, platform, or functionality has also been removed.

The following tables list the items removed:

- [Table 65: Operating Systems, Java Versions, Databases, and Platforms](#) on page 1460
- [Table 66: CDH Components, Subcomponents, and Product Functionality](#) on page 1461
- [Table 67: Cloudera Manager Components, Subcomponents, and Product Functionality](#) on page 1463

Table 65: Operating Systems, Java Versions, Databases, and Platforms

| Item | Related Information | Release in Which Item Is Deprecated | Release in Which Support Is Removed |
|--|---|-------------------------------------|-------------------------------------|
| Operating System <ul style="list-style-type: none"> • Ubuntu 14.04 | CDH and Cloudera Manager Supported Operating Systems on page 20 | 5.8.0 | 5.16.1, 6.0.0 |

| Item | Related Information | Release in Which Item Is Deprecated | Release in Which Support Is Removed |
|--|--|-------------------------------------|-------------------------------------|
| Operating System <ul style="list-style-type: none"> SLES 11 | CDH and Cloudera Manager Supported Operating Systems on page 20 | 5.9.0 | 6.0.0 |
| Operating System <ul style="list-style-type: none"> RHEL 5, CentOS 5, Oracle Enterprise Linux 5 Ubuntu 10.04 (already EOL by Canonical) and 12.04 Debian 7 | CDH and Cloudera Manager Supported Operating Systems on page 20 | July 2015 | 6.0.0 |
| Java 7 | Java Requirements on page 27 | 5.0.0 | 6.0.0 |
| Database <ul style="list-style-type: none"> MySQL 5.0 PostgreSQL 8.1 | Database Requirements on page 24 | July 2015 | 6.0.0 |
| Database <ul style="list-style-type: none"> MySQL 5.1 PostgreSQL 8.4 | | 5.9.0 | 6.0.0 |
| Database <ul style="list-style-type: none"> Oracle 11g | | 5.9.0 | 6.0.0 |
| Tarball CDH Tarball Distribution | | 5.9.0 | 6.0.0 |
| Filesystem <ul style="list-style-type: none"> Amazon S3 and S3n connectors | S3 and S3n are replaced by S3a. Storing HBase Snapshots on Amazon S3 and Copying Cluster Data Using DistCp | | |
| Cloudera Manager Tarball Distribution | | 5.9.0 | 6.0.0 |

Table 66: CDH Components, Subcomponents, and Product Functionality

| Item | Related Information | Release in Which Item Is Deprecated | Release in Which Support Is Removed |
|----------------|---|-------------------------------------|-------------------------------------|
| AsyncHBaseSink | AsyncHBaseSink is incompatible with HBase 2.0 and you can no longer use AsyncHBaseSink with Apache Flume. For information about using HBase2Sink with Apache Flume, see Using Flume . | 6.0.0 | 6.0.0 |

| Item | Related Information | Release in Which Item Is Deprecated | Release in Which Support Is Removed |
|---|---|-------------------------------------|-------------------------------------|
| DataFu | See Removal of the Apache DataFu Pig JAR from CDH 6 on page 1261 | 5.9.0 | 6.0.0 |
| HBaseSink | HBaseSink has been replaced with HBase2Sink, which is compatible with HBase 2.0. For information about using HBase2Sink with Apache Flume, see Using Flume . | 6.0.0 | 6.0.0 |
| hbck read-write repair mode | hbck is only available in a read-only inconsistency identifying mode. See Checking Consistency in HBase Tables for more information. | 6.0.0 | 6.0.0 |
| HFTP | Use WebHDFS | 5.10.1 | 6.0.0 |
| HiveServer1 | | 5.3.0 | 6.0.0 |
| Hue UI version 3 | Instead use Hue UI version 4 | 6.0.0 | 6.0.0 |
| Key HSM Debug Startup | To get debug information during start up, set the root log level to debug in the <code>hbase-site.xml</code> file. | 6.1.0 | 6.1.0 |
| kudu perf loadgen tool configuration options | The <code>-table_num_buckets</code> configuration option of the <code>kudu perf loadgen</code> tool is now removed in favor of <code>-table_num_hash_partitions</code> and <code>-table_num_range_partitions</code> | 6.1.0 | |
| Legacy Scala clients for Kafka (consumer and producer) | The legacy Scala clients (producer and consumer) that are under the <code>kafka-producer.*</code> and <code>kafka-consumer.*</code> package. | CDK 3.0.0 and CDH 6.0.0 | 6.1.0 |
| Llama | | 5.5.0 | 6.0.0 |
| MRv1, MapReduce v1 APIs, MapReduce service | Migrating from MapReduce 1 (MRv1) to MapReduce 2 (MRv2) | 5.0.0 | 6.0.0 |
| Mahout | | 5.5.0 | 6.0.0 |
| Management of Key Trustee Server without Cloudera Manager | Cloudera Navigator Key Trustee Server | 5.9.0 | 6.0.0 |
| MR Pipes | | 5.9.0 | 6.0.0 |

| Item | Related Information | Release in Which Item Is Deprecated | Release in Which Support Is Removed |
|--|---|-------------------------------------|-------------------------------------|
| Navigator Encrypt Filesystem-Level Encryption Using eCryptfs | Block-Level Encryption with dm-crypt There is no support for creating new eCryptfs mount points. Previously existing eCryptfs mount points are not affected. | July 2015 | 6.0.0 |
| Navigator Encrypt migration command | The <code>navencrypt-migration</code> command is deprecated, and has been removed. | February 1, 2018 | 6.0.0 |
| Old NameNode UI | | 5.5.0 | 6.0.0 |
| Oozie Hive Action | Oozie Hive 2 Action Extension | 5.7.0 | 6.0.0 |
| Parquet library with group ID <code>com.twitter</code> | Using Apache Parquet Data Files with CDH | 6.0.0 | 6.0.0 |
| Parquet methods for reading metadata on the client side | Parquet Incompatible Changes | 6.0.0 | 6.0.0 |
| Sentry policy files | Migrating from Sentry Policy Files to the Sentry Service | 5.8.0 | 6.0.0 |
| Spark Standalone | | 5.5.0 | 6.0.0 |
| Spark 1.x | | 5.13 | 6.0.0 |
| Sqoop2 | | 5.9.0 | 6.0.0 |
| Unmanaged (CLI-based) CDH deployments | | 6.0.0 | 6.0.0 |
| Whirr | | 5.5.0 | 6.0.0 |
| YARN Capacity Scheduler | Use FairScheduler | 5.9.0 | 6.0.0 |

Table 67: Cloudera Manager Components, Subcomponents, and Product Functionality

| Item | Related Information | Release in Which Item Is Deprecated | Release in Which Support is Removed |
|--------------------------------------|--|-------------------------------------|-------------------------------------|
| Multi Cloudera Manager Dashboard | | 5.11.1 | 6.0.0 |
| Cloudera Manager API Versions v1 - 5 | Cloudera Manager API Documentation | 5.13 | 6.0.0 |
| Single User Mode | Contact Cloudera for assistance in migration. | 6.0.0 | 6.0.0 |

Appendix: Apache License, Version 2.0

SPDX short identifier: Apache-2.0

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Version 2.0, January 2004
<http://www.apache.org/licenses/>

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