Cloudera Runtime 7.1.9

Hive Troubleshooting

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Contents

HeapDumpPath (/tmp) in Hive data nodes gets full due to .hprof files

Condition

The HeapDumpPath (/tmp) in Hive nodes often gets full because of the .hprof files that are generated. Manually deleting these files to free up space does not always help because the files are generated every time there is an exception. Learn how to resolve this issue by modifying the relevant Tez properties.

Cause

A .hprof file is created when a process exits with an Out Of Memory exception, and the file captures the state of Java Virtual Machine (JVM) when it crashes.

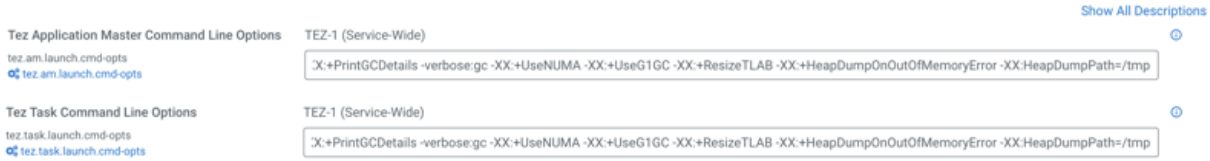
The default value for HeapDumpPath in the Tez Application Master and Tez Task Command Line Options properties is set to /tmp and therefore, Tez saves all the heap dump files in this location.

If you do not want the heap dump files to be saved in /tmp, you can either set the HeapDumpPath value to a different location on the node or choose not to capture heap dump (.hprof) files when a process exits.

Solution

Procedure

1. Log in to Cloudera Manager as an administrator.
2. Go to Clusters Tez Configuration and search for the 'Tez Application Master Command Line Options' and 'Tez Task Command Line Options' properties.



3. Choose one of the following solutions:

If you want to...	Then...
Choose a different location in the Hive node to capture heap dumps	Modify the value of XX:HeapDumpPath in the above properties from /tmp to a different location, for example, /var/tmp.
Disable automatic capture of heap dumps	Remove -XX:+HeapDumpOnOutOfMemoryError -XX:HeapDumpPath=/tmp parameters from the above properties. **Note:** You can add these parameters when you want to work with heap dumps or when you require heap dumps for debugging purposes.

4. Click Save Changes.
5. Restart the Tez service.

Unable to insert data due to noexec flag on /tmp directory

Condition

If you are running an environment in which the /tmp directory is mounted with the noexec option, Hive table insertion fails stating that the Tez compiler could not initialize class org.xerial.snappy.Snappy.

Cause

While inserting data into a Hive table through a Beeline query, the insert operation can fail with the following error:

```
Error: Error while compiling statement: FAILED: Execution Error, return code
 -101 from org.apache.hadoop.hive.ql.exec.tez.TezTask. Could not initialize
class org.xerial.snappy.Snappy (state=08S01,code=-101)
```

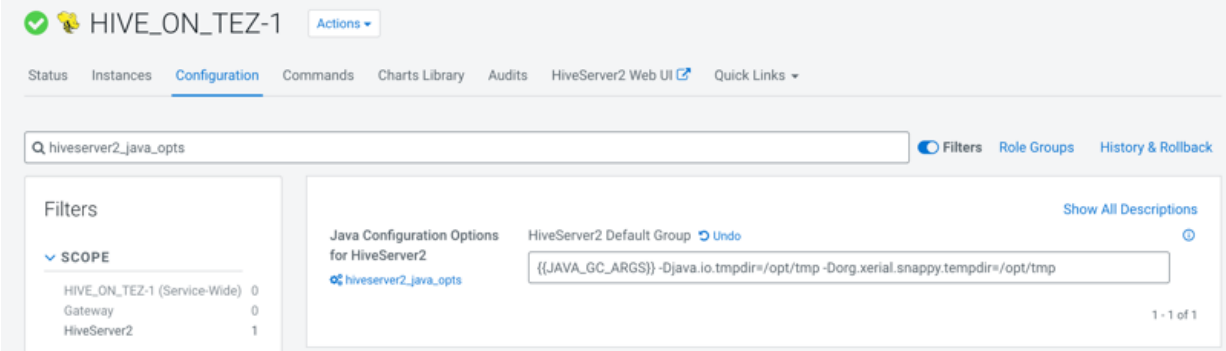
The error occurs when the /tmp directory is mounted with the noexec option. The noexec mount option is used as an enhanced security measure to prevent running of binaries from the /tmp directory. However, Hive refers to the /tmp library path to access the Snappy JARs and since the noexec mount option is set on /tmp, the compiler fails to initialize.

Remedy

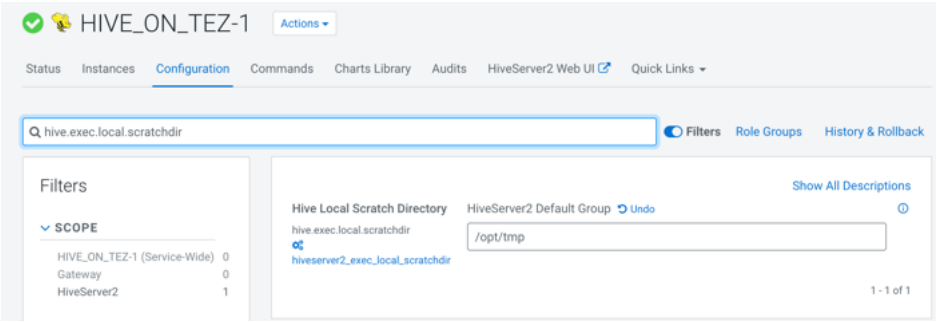
Procedure

1. Log in to Cloudera Manager as an administrator.
2. Go to Clusters Hive on Tez Configuration and search for the hiveserver2_java_opts property.
3. Specify a temporary directory other than /tmp, for example, /opt/tmp by appending the following in hiveserver2_java_opts.

   ```
   -Djava.io.tmpdir=/opt/tmp -Dorg.xerial.snappy.tempdir=/opt/tmp
   ```

4. Search for the hive.exec.local.scratchdir property and set the value to /opt/tmp.

5. Click Save Changes
6. Before you restart the Hive on Tez service, ensure that the temporary directory (/opt/tmp) that you specified is present in all the hosts and the Hive user has access to this directory.
7. Restart the Hive on Tez service for the changes to apply.

Query fails with "Counters limit exceeded" error message

Condition

After upgrading to CDP Private Cloud Base, you may notice that some Hive queries fail with a "Counters limit exceeded: Too many counters: 10001 max=10000" and "Counters limit exceeded: Too many counter groups: 3001 max=3000".

Cause

This issue occurs because a lower value is specified for Apache Tez task counters (tez.counters.max) and counter groups (tez.counters.max.groups), which prevents Tez from executing the DAG. If you are running long queries, increase the value for Tez counters and counter groups.

It is recommended that you set the value of tez.counters.max at the session level and also add it to the allowlist.

Solution

Procedure

1. Log in to Cloudera Manager as an administrator.
2. Go to Clusters Hive on Tez Configuration and search for 'HiveServer2 Advanced Configuration Snippet (Safety Valve) for hive-site.xml'.
3. Click ⊕ and add the property key: hive.security.authorization.sqlstd.confwhitelist.append.
4. Provide the property value, or values, to allowlist, for example: tez\.counters\..* or tez\.counters\.max|tez\.counters\.max\.groups.

   This action appends the parameters to the allowlist.
5. Save the changes and restart the Hive on Tez service.
6. From the Beeline shell, set the tez.counters.max property to a higher value and run the query.
   set tez.counters.max=50000;

   Run the Hive query and if it continues to fail, perform the steps provided below.
7. In Cloudera Manager, go to Clusters Tez Configuration and search for the tez.counters.max property.
8. Modify the value to 50000, save changes, and refresh the Tez service.
9. Restart the Hive on Tez service and run the Hive query again.

   If you encounter the following error, modify the value for tez.counters.max.groups.

```
ERROR : Counters limit exceeded: org.apache.tez.common.counters.LimitExc
eededException: Too many counter groups: 3001 max=3000
```

10. In Cloudera Manager, go to Clusters Tez Configuration and search for the tez.counters.max.groups property.
11. Modify the value to 10000, save changes, and refresh the Tez service.
12. Restart the Hive on Tez service and run the Hive query.

Managing high partition workloads

Condition

If you are running high partition workloads, such as a table having 5000 partitions and 100 columns, you may notice the following error when inserting data from a source table to the destination table:

```
ERROR : FAILED: Execution Error, return code 40000 from org.apache.hadoop.hi
ve.ql.exec.MoveTask.
MetaException(message:One or more instances could not be made persistent)
```

Cause

The issue occurs because the queries are run one at a time and there is no query concurrency. Learn how you can configure the HiveServer (HS2) and Hive Metastore (HMS) services with the recommended values to prevent errors while inserting data into high partition workloads.

Solution

Procedure

1. Log in to Cloudera Manager as an administrator.
2. Go to Clusters Hive on Tez Configuration and search for 'HiveServer2 Advanced Configuration Snippet (Safety Valve) for hive-site.xml'.
3. Tune the following HS2 parameters by setting the recommended values.

   ```
   hive.optimize.sort.dynamic.partition.threshold=0;
   hive.thrift.client.max.message.size=2147483647;
   hive.metastore.client.skip.columns.for.partitions=true;
   hive.stats.autogather=false;
   hive.stats.column.autogather=false;
   hive.msck.repair.batch.size=200;
   ```

   If the properties are not available, click ⊕ to add custom configurations and set the values.
4. Save the changes and restart the Hive on Tez service.
5. Go to Clusters Hive Configuration and search for 'Hive Metastore Server Advanced Configuration Snippet (Safety Valve) for hive-site.xml'.
6. Tune the following HMS parameters by setting the recommended values.

   ```
   hive.metastore.direct.sql.batch.size=5000
   hive.txn.timeout=3600
   hive.metastore.try.direct.sql=true
   hive.metastore.try.direct.sql.ddl=true
   ```

   If the properties are not available, click ⊕ to add custom configurations and set the values.
7. Save the changes and restart the Hive service.
8. Run your high partition workloads.

HiveServer is unresponsive due to large queries running in parallel

Condition

HiveServer (HS2) is blocking user queries or sessions because of multiple Hive sessions running in parallel.

Cause

The issue occurs when a large query is running and you submit the same query again. The hive.query.results.cache .wait.for.pending.results property forces a query to wait for the pending results of an already running query, in order to use the cached result when it is ready.

You can choose to disable this property to avoid blocking queries submitted by other users or you can avoid running the same large queries parallely.

Remedy

Procedure

1. Go to Clusters Hive on Tez Configuration and add the following property name and its value in the HiveServer2 Advanced Configuration Snippet (Safety Valve) for hive-site.xml field:

   Name: hive.query.results.cache.wait.for.pending.results

   Value: false
2. Save the changes and restart the Hive on Tez service.