

Cloudera Runtime 7.2.15

Atlas Audits

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CLOUDERA

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Audit Operations

As an Atlas administrator you can view the audit operations listed in the Audits tab in the Atlas UI. The audit data is captured implicitly by Atlas for various operations.

The audit operations include:

- Import
- Export
- Server start
- Server state active (In case of HA environment)
- Type Definition create
- Type Definition update
- Type Definition delete

The Type Definition can be of any type category listed:

- Business Metadata
- Classification
- Enum
- Entity
- Relationship
- Struct

Audit is collected for every create, update and delete operations.



Note: A user or a group must have the Admin Audits Ranger permission to access audits and related information.

Allow Conditions:

Hide

Select Role	Select Group	Select User	Permissions	Delegate Admin
<div>Select Roles</div>	<div>Select Groups</div>	<div> × beacon × dpprofiler × admin × nifi </div>	<div> Admin Export Admin Import Admin Purge Admin Audits </div>	<div> add/edit permissions <div> <input checked="" type="checkbox"/> Admin Export <input checked="" type="checkbox"/> Admin Import <input checked="" type="checkbox"/> Admin Purge <input checked="" type="checkbox"/> Admin Audits <input checked="" type="checkbox"/> Select/Deselect All </div> <div> <input checked="" type="checkbox"/> <input type="checkbox"/> </div> </div>

+

Exclude from Allow Conditions:

The JSON data is the payload which contains the actual data. You can submit the payload using the appropriate REST API tool.

The screenshot shows the Apache Atlas Audit Operations page. The left sidebar contains search filters for entity types, classifications, and terms. The main area displays a table of audit entries for 'Type System'. A dropdown menu is open over the 'Operation' column, showing options like TYPE_DEF_CREATE, TYPE_DEF_UPDATE, and TYPE_DEF_DELETE.

An audit entry logs the total number of Type Definitions that are created for create, update, and delete operations. Type Definitions are categorized according to entity types, struct types, Enum types, relationships, classification, and Business Metadata. For every Type Definition, the JSON data is stored in the audit entry.

Each audit entry logs the following details:

- Users - Indicates the user name of the user who performed the audit operation..
- Operation - Indicates an operation enum; can be used for searching audit entities as well
- Client ID - Indicates the IP address of the machine from which the request was generated.
- Result Count - Provides the total number of artifacts on which the operation was performed.
- Start Time - Indicates the actual time when the request was generated.
- End Time - Indicates the actual time when the requested operation was completed.
- Duration - Indicates the time taken by a request to complete the intended operation.

Business Metadata

Enumerations

Audits

Type System

> Filters

Columns

Users	Operation	Client ID	Result Count	Start Time	End Time
> hrt_qa	PURGE	██████████	5	11/09/2020 01:03:32 PM (IST)	11/09/2020 01:03:32 PM (IST)
> hrt_qa	PURGE	██████████	5	11/09/2020 01:04:01 PM (IST)	11/09/2020 01:04:01 PM (IST)
> hrt_qa	PURGE	██████████	5	11/09/2020 02:44:36 PM (IST)	11/09/2020 02:44:37 PM (IST)
> hrt_qa	PURGE	██████████	5	11/09/2020 02:43:58 PM (IST)	11/09/2020 02:43:58 PM (IST)
>	TYPE_DEF_CREATE		5	11/09/2020 10:08:58 AM (IST)	11/09/2020 10:09:35 AM (IST)
> hrt_qa	PURGE	██████████	5	11/09/2020 01:02:49 PM (IST)	11/09/2020 01:02:49 PM (IST)
> hrt_qa	PURGE	██████████	5	11/09/2020 01:02:47 PM (IST)	11/09/2020 01:02:47 PM (IST)
> hrt_qa	PURGE	██████████	5	11/09/2020 02:43:04 PM (IST)	11/09/2020 02:43:05 PM (IST)
> hrt_qa	PURGE	██████████	5	11/09/2020 02:43:01 PM (IST)	11/09/2020 02:43:01 PM (IST)
> ██████████	TYPE_DEF_CREATE	██████████	5	11/10/2020 04:57:08 PM (IST)	11/10/2020 04:57:09 PM (IST)

Showing 10 records From 1 - 25

Page Limit : 25

Atlas Type Definitions

Using Type Definitions, you can create, update, and delete entities of various types.

An example of Type Definition - Create

Admin

AND OR

+ Add filter

+ Add filter group

Operation (atlas_operation)

=

TYPE_DEF_CREATE

×

Apply

Close

Business Metadata

Enumerations

Audits

Type System

> Filters

Columns

Users	Operation	Client ID	Result Count	Start Time	End Time
>	TYPE_DEF_CREATE		17	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:37 PM (IST)
>	TYPE_DEF_CREATE		18	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:45 PM (IST)
>	TYPE_DEF_CREATE		12	11/03/2020 04:42:59 PM (IST)	11/03/2020 04:43:17 PM (IST)
>	TYPE_DEF_CREATE		9	11/03/2020 04:42:59 PM (IST)	11/03/2020 04:43:13 PM (IST)
>	TYPE_DEF_CREATE		10	11/03/2020 04:42:59 PM (IST)	11/03/2020 04:43:18 PM (IST)
>	TYPE_DEF_CREATE		7	11/03/2020 04:42:59 PM (IST)	11/03/2020 04:43:15 PM (IST)
>	TYPE_DEF_CREATE		9	11/03/2020 04:43:27 PM (IST)	11/03/2020 04:43:30 PM (IST)
>	TYPE_DEF_CREATE		3	11/03/2020 04:43:27 PM (IST)	11/03/2020 04:43:31 PM (IST)
>	TYPE_DEF_CREATE		4	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:42:06 PM (IST)
>	TYPE_DEF_CREATE		20	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:42:09 PM (IST)
>	TYPE_DEF_CREATE		11	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:42:14 PM (IST)
>	TYPE_DEF_CREATE		8	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:42:11 PM (IST)
>	TYPE_DEF_CREATE		6	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:42:10 PM (IST)
>	TYPE_DEF_CREATE		7	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:42:12 PM (IST)
>	TYPE_DEF_CREATE		21	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:42:18 PM (IST)
>	TYPE_DEF_CREATE		5	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:42:16 PM (IST)
>	TYPE_DEF_CREATE		3	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:42:15 PM (IST)

An example of Type Definition - Update

Admin

AND OR

+ Add filter

+ Add filter group

Operation (atlas_operation)

=

TYPE_DEF_UPDATE

×

Apply

Close

Business MetadataEnumerationsAuditsType System

> FiltersColumns

Users	Operation	Client ID	Result Count	Start Time	End Time
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:46 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:47 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:47 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:48 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:49 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:48 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:49 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:50 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:49 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:50 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:51 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:51 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:53 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:52 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:52 PM (IST)
>	TYPE_DEF_UPDATE		1	11/03/2020 04:41:28 PM (IST)	11/03/2020 04:41:54 PM (IST)

An example of Type Definition - Delete

Admin

ANDOR

+ Add filter+ Add filter group

Operation (atlas_operation)

=

TYPE_DEF_DELETE

Apply

Close

Business MetadataEnumerationsAuditsType System

> FiltersColumns

Users	Operation	Client ID	Result Count	Start Time	End Time
✓	TYPE_DEF_DELETE		1	11/10/2020 07:27:04 PM (IST)	11/10/2020 07:27:05 PM (IST)
Classification Type Deleted <ul style="list-style-type: none">tag_KJBuc					
✓	TYPE_DEF_DELETE		1	11/10/2020 07:26:51 PM (IST)	11/10/2020 07:26:51 PM (IST)
Classification Type Deleted <ul style="list-style-type: none">child_tag					

Showing 2 records From 1 - 25

Page Limit : 25

Atlas Export and Import Operations

An audit entry is created for every export and import operation.
An example of - Export operation

Admin

AND OR + Add filter + Add filter group

Operation (atlas_operation) = EXPORT ✕

Apply Close

Business Metadata Enumerations **Audits** Type System

> Filters Columns

Users	Operation	Client ID	Result Count	Start Time	End Time
✓	EXPORT		3	11/10/2020 07:18:24 PM (IST)	11/10/2020 07:18:26 PM (IST)

Export Entities And Options

hive_db 3

params (1) {"fetchType": "FULL", "matchType": "startsWith"}

Showing 1 records From 1 - 25 Page Limit: 25

Each import audit entry provides information about the total number of entities imported, along with the number of entities imported with each Type Definition.

An example of - Import operation

Admin

AND OR + Add filter + Add filter group

Operation (atlas_operation) = IMPORT ✕

Apply Close

Business Metadata Enumerations **Audits** Type System

> Filters Columns

Users	Operation	Client ID	Result Count	Start Time	End Time
>	IMPORT		2	11/12/2020 06:19:01 PM (IST)	11/12/2020 06:19:01 PM (IST)
>	IMPORT		3	11/12/2020 06:16:48 PM (IST)	11/12/2020 06:16:53 PM (IST)

Showing 2 records From 1 - 25 Page Limit: 25

Atlas Server Operations

When you perform server related tasks, audit entries are logged.

When the Atlas server is started, an audit entry is logged. Also, when the server is started in the Active mode using High Availability (HA), an audit entry is logged. For more information, see [About Atlas High Availability](#).

An example of - Server Start operation

Admin

AND OR

+ Add filter + Add filter group

Operation (atlas_operation) = SERVER_START

Apply Close

Business Metadata

Enumerations

Audits

Type System

> Filters

Columns

Users	Operation	Client ID	Result Count	Start Time	End Time
>	SERVER_START		N/A	11/03/2020 08:09:49 PM (IST)	11/03/2020 08:10:11 PM (IST)
>	SERVER_START		N/A	11/03/2020 08:15:10 PM (IST)	11/03/2020 08:15:32 PM (IST)
>	SERVER_START		N/A	11/03/2020 08:07:01 PM (IST)	11/03/2020 08:07:25 PM (IST)
>	SERVER_START		N/A	11/03/2020 04:40:49 PM (IST)	11/03/2020 04:43:52 PM (IST)

An example of - Server State Active operation

Admin

AND OR

+ Add filter + Add filter group

Operation (atlas_operation) = SERVER_STATE_ACTIVE

Apply Close

Business Metadata

Enumerations

Audits

Type System

> Filters

Columns

Users	Operation	Client ID	Result Count	Start Time	End Time
>	SERVER_STATE_ACTIVE		N/A	11/03/2020 08:07:25 PM (IST)	11/03/2020 08:07:25 PM (IST)
>	SERVER_STATE_ACTIVE		N/A	11/03/2020 08:10:11 PM (IST)	11/03/2020 08:10:11 PM (IST)
>	SERVER_STATE_ACTIVE		N/A	11/03/2020 04:43:52 PM (IST)	11/03/2020 04:43:52 PM (IST)
>	SERVER_STATE_ACTIVE		N/A	11/03/2020 08:15:32 PM (IST)	11/03/2020 08:15:32 PM (IST)

Audit enhancements

When any entity is created in Atlas, the created entity is stored in HBase tables.

Currently, when the created entity is modified or updated, for example, entity core attributes, relationship attributes, custom attributes, or associated classifications, the changed entity is captured by Atlas either as a full entity object or partial object (with only updated attributes or relations) and stored in HBase tables.

While processing update requests, Atlas generates entity audit events and stores them in the HBase table. These audit events have complete entity information in the JSON format. Multiple updates on a single entity results in generating multiple audit events, each of which has a complete entity instance duplicated with minimal changes.

For example, if entity A1 is updated or modified for about five times, for every update, along with the changes (minimal), the entire entity is stored in the HBase tables. This process consumes additional storage space in HBase tables. In simple terms, A1 + the number of times the changes made is the resultant output that is saved in the HBase tables. Even if the changes are minimal (updating an attribute or relations or something that is not significant), Atlas captures the complete entity.

The Atlas audit enhancement optimizes storage space by not capturing the entire entity instance in each audit event. You can configure Atlas to store only differential information in audit events.

You must enable the application flag by setting the parameter using:

Cloudera Manager UI > Atlas > Configuration > Click Advanced (Under Category) > Enter the following parameter and the value under Atlas Server Advanced Configuration Snippet (Safety Valve) for confi/atlas-application.properties text field.

atlas.entity.audit.differential=true

To have significant savings in the HBase table memory footprint, only the difference between the original and updated entity state is captured in Atlas.

Previously, Atlas exhibited full entity as shown in the image:

The screenshot displays the Cloudera Atlas user interface. On the left, a sidebar shows a hierarchical tree of entities, including file_system, hive, impala, other_types, and spark. The main area is titled 'Entities, Classifications, Glossaries' and shows a list of entities. The selected entity is 'db_thor_impala_tbl_51'. The details view for this entity is shown, with tabs for 'Technical properties' and 'Relationship properties'. The 'Technical properties' tab is active, displaying a list of attributes and their values. The 'Relationship properties' tab is also visible, showing columns and other relationships. The entity name 'db_thor_impala_tbl_51' is highlighted in the top header.

Currently, Atlas displays only the differences between the original and updated entity state as shown in the image

Entities

file_system (31)

hdfs_path (31)

hive (2,704)

hive_column (1,530)

hive_column_lineage (855)

hive_db (3)

hive_process (50)

hive_process_execution (50)

hive_storagedesc (108)

hive_table (108)

impala (798)

impala_column_lineage (698)

impala_process (50)

impala_process_execution (...)

other_types

_ALL_ENTITY_TYPES

> admin2020/10/14 14:56:59 (PDT)Classification Added

> admin2020/10/14 14:47:21 (PDT)Entity Updated

Name: e7d578c9-5978-43d9-aaaa-000000013034

Technical properties

commentSome Comment

descriptionSome Description

ownersystem-2

> admin2020/10/14 14:44:11 (PDT)Entity Updated

> admin2020/10/14 14:43:19 (PDT)Entity Updated

As a use case, previously when you add data under user-defined-properties, for example, key_1 and val_1, Atlas displayed the same as seen in the image.

Usershrt_qaTimestamp04/14/2021 03:02:11 PM (IST)ActionsUser-defined Attribute(s) Updated

Name: information_schema

Technical properties

clusterNamecm

descriptionN/A

displayNameN/A

locationhdfs://atlas-kz59lh-master0.atlas-kz.l2ov-m7vs.int.cldr.work:8020/warehouse/tablespace/external/hive/information_schema.db

managedLocationhdfs://atlas-eww3h5-master0.atlas-kz.l2ov-m7vs.int.cldr.work:8020/warehouse/tablespace/managed/hive/information_schema.db

nameinformation_schema

ownerhive

ownerTypeUSER

parameters()

qualifiedNameinformation_schema@cm

replicatedFromN/A

replicatedToN/A

typeNamehive_db

userDescriptionN/A

Relationship properties

ddlQueriesN/A

locationPath/warehouse/tablespace/external/hive/information_schema.db

managedLocationPath/warehouse/tablespace/managed/hive/information_schema.db

meaningsN/A

tablesN/A


User-defined properties


key_1


val_1

Currently Atlas displays only the changed or updated entity values.

11

 information_schema (hive_db)

Classifications: 

Terms: 

Properties Relationships Classifications **Audits** Tables

Users	Timestamp	Actions
hrt_ga	04/14/2021 03:04:40 PM (IST)	User-defined Attribute(s) Updated

Name: 60fa182a-d2dc-435a-b51a-e3f2c1be85d9

Technical properties

No Record found!

User-defined properties

key_1 value_1

Examples of Audit Operations

Some examples of payload submission for audit operations.

An example of creating a Type Definition:

```
enumDefs:
1.days_of_week
entityDefs:
1.Country
2.State
3.Vehicle

relationshipDefs:
1.country_state_rel
curl --location --request POST -u admin:admin 'http://carl23.test1234.root
.hwx.site:23400/api/atlas/v2/types/typedefs' \
--header 'Content-Type: application/json' \
--data-raw '{
"enumDefs": [
{
"name": "days_of_week",
"typeVersion": "1.0",
"elementDefs": [
{
"ordinal": 1,
"value": "MONDAY"
},
{
"ordinal": 2,
"value": "TUESDAY"
},
{
"ordinal": 3,
"value": "WEDNESDAY"
},
{
"ordinal": 4,
"value": "THURSDAY"
},
{
"ordinal": 5,
```

```

"value": "FRIDAY"
},
{
  "ordinal": 6,
  "value": "SATURDAY"
},
{
  "ordinal": 7,
  "value": "SUNDAY"
}
]
},
],
"entityDefs": [
{
  "category": "ENTITY",
  "createdBy": "admin",
  "updatedBy": "admin",
  "createTime": 1537261952180,
  "updateTime": 1537262097732,
  "version": 1,
  "name": "Vehicle",
  "description": "desc Vehicle",
  "typeVersion": "1.1",
  "attributeDefs": [
    {
      "name": "no_of_wheels",
      "typeName": "int",
      "isOptional": true,
      "cardinality": "SINGLE",
      "valuesMinCount": 1,
      "valuesMaxCount": 1,
      "isUnique": false,
      "isIndexable": false,
      "includeInNotification": false
    }
  ]
},
{
  "category": "ENTITY",
  "createdBy": "admin",
  "updatedBy": "admin",
  "createTime": 1537261952180,
  "updateTime": 1537262097732,
  "version": 1,
  "name": "Country",
  "description": "desc Country",
  "typeVersion": "1.1",
  "attributeDefs": [
    {
      "name": "ISD_CODE",
      "typeName": "string",
      "isOptional": false,
      "cardinality": "SINGLE",
      "valuesMinCount": 1,
      "valuesMaxCount": 1,
      "isUnique": false,
      "isIndexable": false,
      "includeInNotification": false
    }
  ]
},
{
  "category": "ENTITY",

```

```

"createdBy": "admin",
"updatedBy": "admin",
"createTime": 1537261952180,
"updateTime": 1537262097732,
"version": 1,
"name": "State",
"description": "desc State",
"typeVersion": "1.1",
"attributeDefs": [
{
"name": "STD_CODE",
"typeName": "string",
"isOptional": false,
"cardinality": "SINGLE",
"valuesMinCount": 1,
"valuesMaxCount": 1,
"isUnique": false,
"isIndexable": false,
"includeInNotification": false
}
],
},
],
"relationshipDefs": [
{
"name": "country_state_rel",
"typeVersion": "1.1",
"relationshipCategory": "AGGREGATION",
"endDef1": {
"type": "Country",
"name": "state_st",
"isContainer": false,
"cardinality": "SINGLE",
"isLegacyAttribute": true
},
"endDef2": {
"type": "State",
"name": "country_ct",
"isContainer": true,
"cardinality": "SET"
},
"propagateTags": "NONE"
}
]
}]'

```

An example of updating a Type Definition:

```

enumDefs:days_of_week
entityDefs:Country
curl --location --request PUT -u admin:admin 'http://carl23.carl23-1.root.
hwx.site:31000/api/atlas/v2/types/typedefs' \
--header 'Content-Type: application/json' \
--data-raw '{
"enumDefs": [
{
"name": "days_of_week",
"typeVersion": "1.0",
"elementDefs": [
{
"ordinal": 1,
"value": "MONDAY"

```

```

},
{
  "ordinal": 2,
  "value": "TUESDAY"
},
{
  "ordinal": 3,
  "value": "WEDNESDAY"
},
{
  "ordinal": 4,
  "value": "THURSDAY"
},
{
  "ordinal": 5,
  "value": "FRIDAY"
},
{
  "ordinal": 6,
  "value": "SATURDAY"
},
{
  "ordinal": 7,
  "value": "SUNDAY"
},
{
  "ordinal": 8,
  "value": "HOLIDAY"
}
],
},
],
"entityDefs": [
{
  "category": "ENTITY",
  "createdBy": "admin",
  "updatedBy": "admin",
  "createTime": 1537261952180,
  "updateTime": 1537262097732,
  "version": 1,
  "name": "Country",
  "description": "desc Country Updated",
  "typeVersion": "1.1",
  "attributeDefs": [
    {
      "name": "ISD_CODE",
      "typeName": "string",
      "isOptional": false,
      "cardinality": "SINGLE",
      "valuesMinCount": 1,
      "valuesMaxCount": 1,
      "isUnique": false,
      "isIndexable": false,
      "includeInNotification": false
    }
  ]
}
]
]
}'

```

An example of deleting a Type Definition:

```
curl --location --request DELETE -u admin:admin
```

```
'http://car123.car123-1.root.hwx.site:31000/api/atlas/v2/types/typeDef/name/Vehicle'
```

An example of exporting an Atlas entity:

```
'{
  "itemsToExport": [
    { "typeName": "DB", "uniqueAttributes": { "name": "Sales" } },
    { "typeName": "DB", "uniqueAttributes": { "name": "Reporting" } }
  ],
  { "typeName": "DB", "uniqueAttributes": { "name": "Logging" } }
  ],
  "options": { "fetchType": "full" }
}'
```

For additional reference related to exporting entities, see <https://atlas.apache.org/#/ExportAPI>.

An example of importing an Atlas entity:

Performing an import operation should create an entry in the audits tab.

For additional reference related to exporting entities, see <https://atlas.apache.org/#/ImportAPI>.