

Cloudera Runtime 7.2.17

## Atlas Audits

Date published: 2021-03-04

Date modified: 2023-06-26

# CLOUDERA

<https://docs.cloudera.com/>

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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.



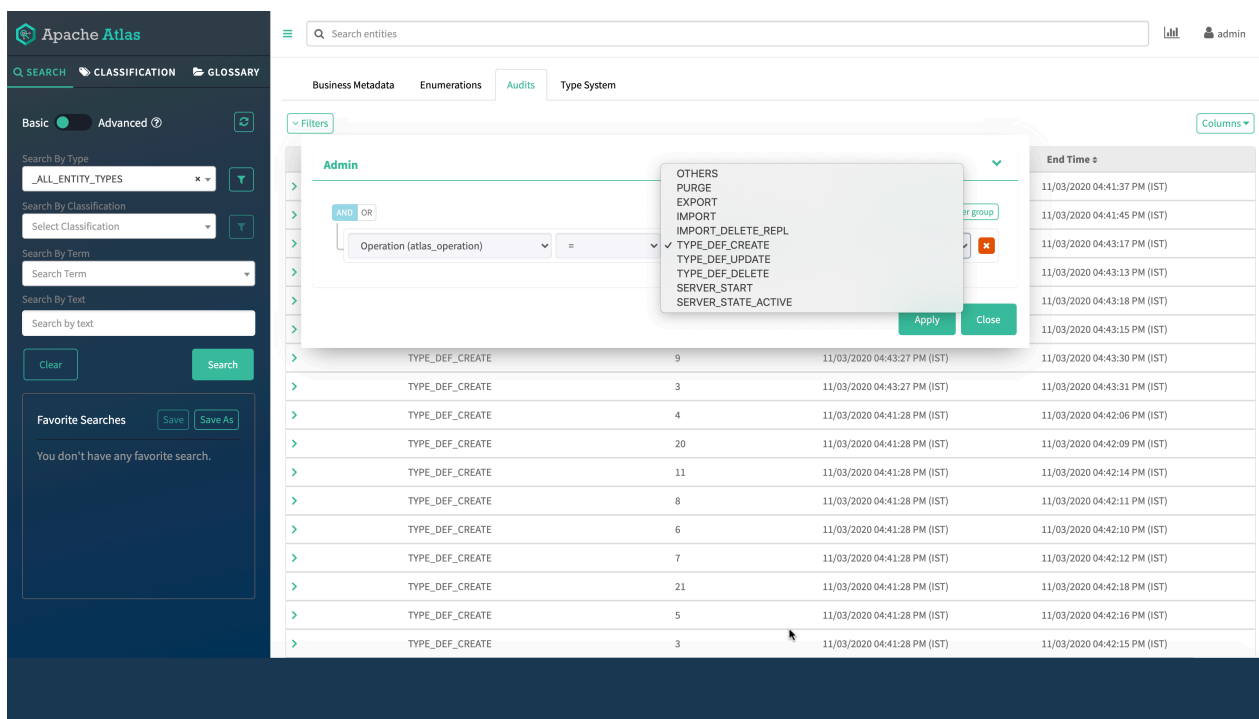
**Note:** A user or a group must have the Admin Audits Ranger permission to access audits and related information.

Allow Conditions:

Hide

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



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.

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 Metadata Enumerations **Audits** Type System

> Filters Columns ▾

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** ▾

AND OR + Add filter + Add filter group

Operation (atlas\_operation) = TYPE\_DEF\_DELETE ✕

Apply Close

Business Metadata Enumerations **Audits** Type System

> Filters Columns ▾

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					
• 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					
• 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

## Exporting data using Connected type

As per [Apache Atlas Software Foundation](#) notes, only directly connected entities must be exported and when the data is exported with the starting entity as Hive table and the fetch type is "CONNECTED", the exported entities must not include the external and managed locations.

But the expected behavior is that all the entities which are directly connected entities get exported. Additionally, other dependent entities will be updated like the managed location of a database or associated database of a table which also gets exported.



For example:

```
db1.table1 --> p1 ---> db2.table2 ---> p2 ---> db3.table3 ---> p3 ---> db4.table4 --> p4 ---> db5.table5

Export db3.table3 with options
{
  "itemsToExport": [{
    "typeName": "hive_table", "uniqueAttributes":
    { "qualifiedName": "db3.table3@cluster0" }
  }],
  "options":
  { "fetchType": "connected" }
}
```

Result: The exported ZIP file must contain entities: db2, db3, db4, table2, table3, table4, p2, and p3.

## 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

The screenshot shows the Atlas Admin interface. At the top, there is a navigation bar with 'Admin' and a dropdown arrow. Below this is a filter configuration area with 'AND' and 'OR' options. A filter is applied: 'Operation (atlas\_operation) = SERVER\_START'. The 'SERVER\_START' value is highlighted with a red box. There are 'Add filter' and 'Add filter group' buttons. Below the filter area are 'Apply' and 'Close' buttons.

Below the filter area, there is a tabbed interface with 'Business Metadata', 'Enumerations', 'Audits', and 'Type System'. The 'Audits' tab is selected. There is a 'Filters' button and a 'Columns' dropdown.

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

The screenshot shows the 'Admin' interface for audit operations. A filter is configured for 'Operation (atlas\_operation)' with the value 'SERVER\_STATE\_ACTIVE'. Below this, a table displays the results of the audit operation.

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:

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

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.

Users: hrt\_ga | Timestamp: 04/14/2021 03:02:11 PM (IST) | Actions: User-defined Attribute(s) Updated

Name: information\_schema

**Technical properties**

clusterName	cm
description	N/A
displayName	N/A
location	hdfs://atlas-kz59ih-master0.atlas-kz.l2ov-m7vs.int.cldr.work:8020/warehouse/tablespace/external/hive/information_schema.db
managedLocation	hdfs://atlas-eww3h5-master0.atlas-kz.l2ov-m7vs.int.cldr.work:8020/warehouse/tablespace/managed/hive/information_schema.db
name	information_schema
owner	hive
ownerType	USER
parameters	{}
qualifiedName	information_schema@cm
replicatedFrom	N/A
replicatedTo	N/A
typeName	hive_db
userDescription	N/A

**Relationship properties**

ddlQueries	N/A
locationPath	/warehouse/tablespace/external/hive/information_schema.db
managedLocationPath	/warehouse/tablespace/managed/hive/information_schema.db
meanings	N/A
tables	N/A

**User-defined properties**

key_1	val_1
-------	-------

Currently Atlas displays only the changed or updated entity values.

information\_schema (hive\_db)

Classifications: +

Terms: +

Properties Relationships Classifications Audits Tables

Users: hrt\_ga | Timestamp: 04/14/2021 03:04:40 PM (IST) | Actions: 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://car123.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://car123.car123-1.root.
hw.x.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/type
      edef/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>.