Cloudera Runtime 7.2.12

Atlas Audits

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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:

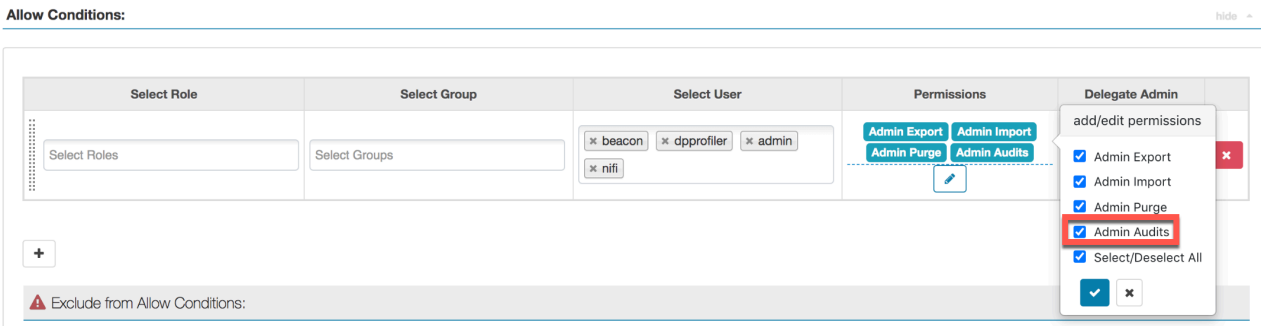
- Import
- Export
- Server start
- Server state active (In case of HA environment)
- Type Definition create
- Type Definition update
- Type Definition delete

The Type Definition can be of any type category listed:

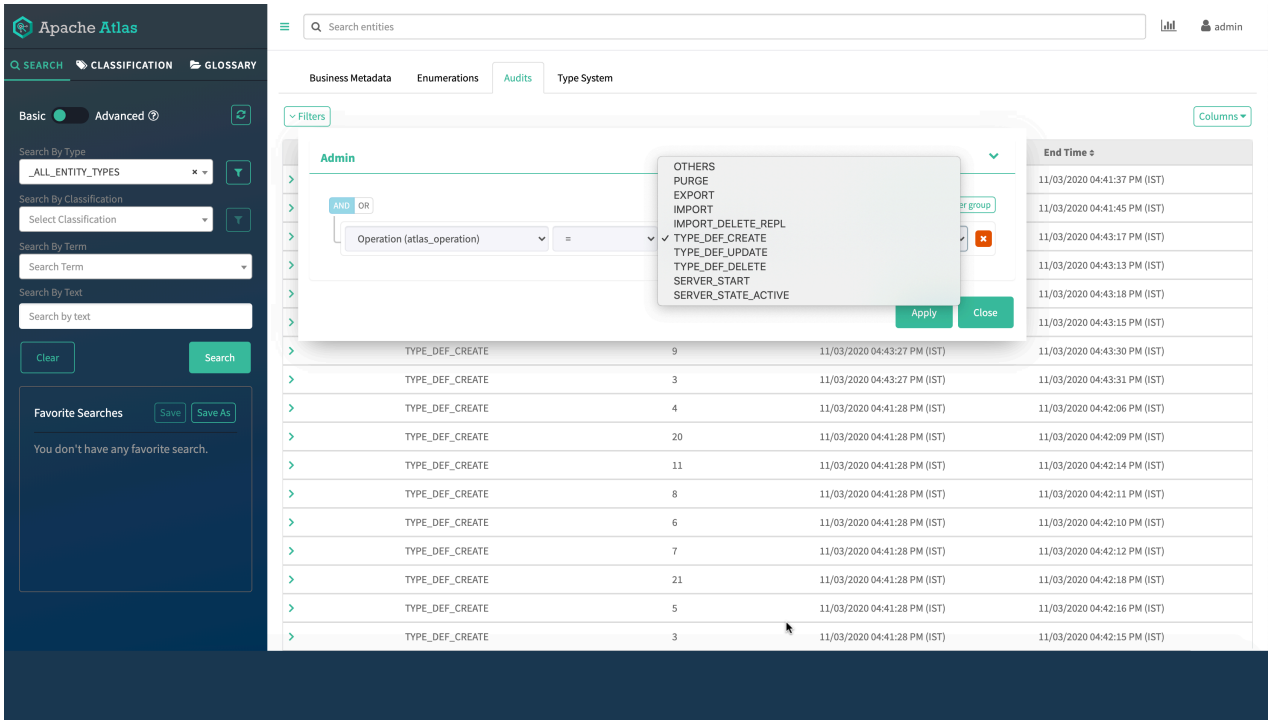
- Business Metadata
- Classification
- Enum
- Entity
- Relationship
- Struct

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.



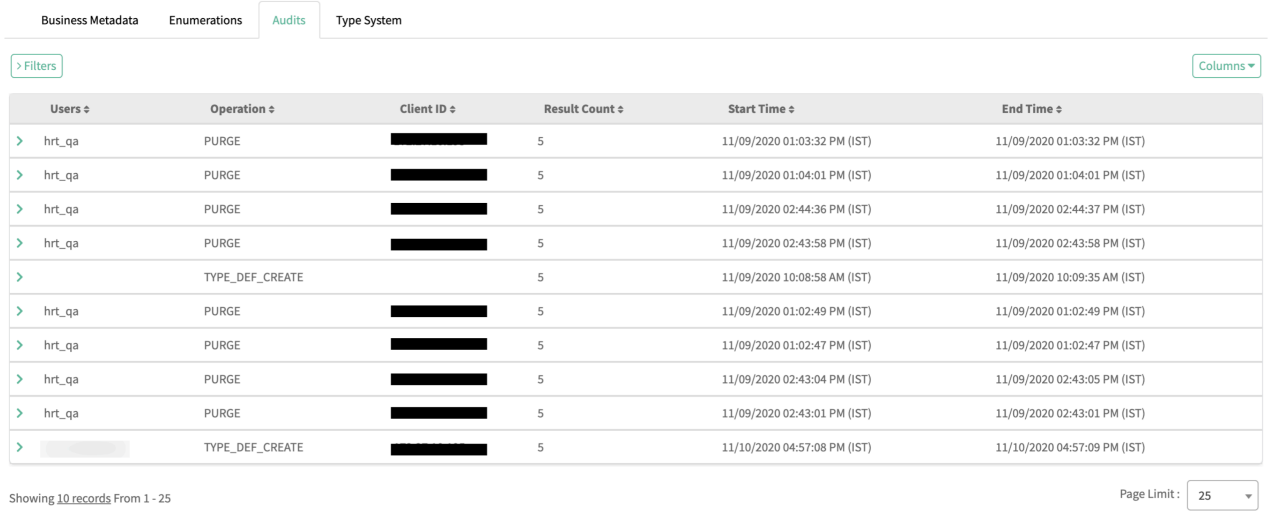
The JSON data is the payload which contains the actual data. You can submit the payload using the appropriate REST API tool.



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:

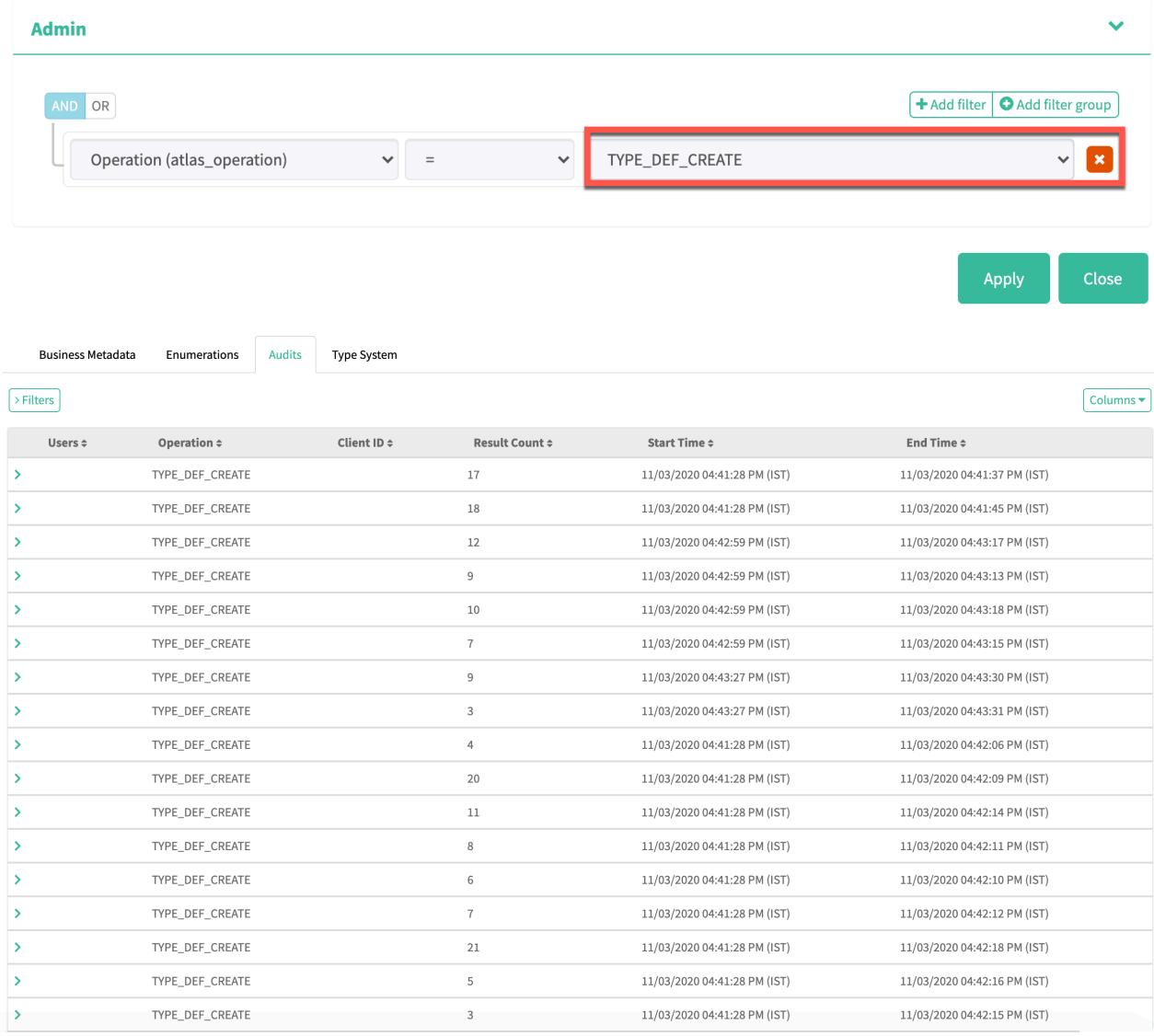
- Users - Indicates the user name of the user who performed the audit operation..
- Operation - Indicates an operation enum; can be used for searching audit entities as well
- Client ID - Indicates the IP address of the machine from which the request was generated.
- Result Count - Provides the total 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.



Atlas Type Definitions

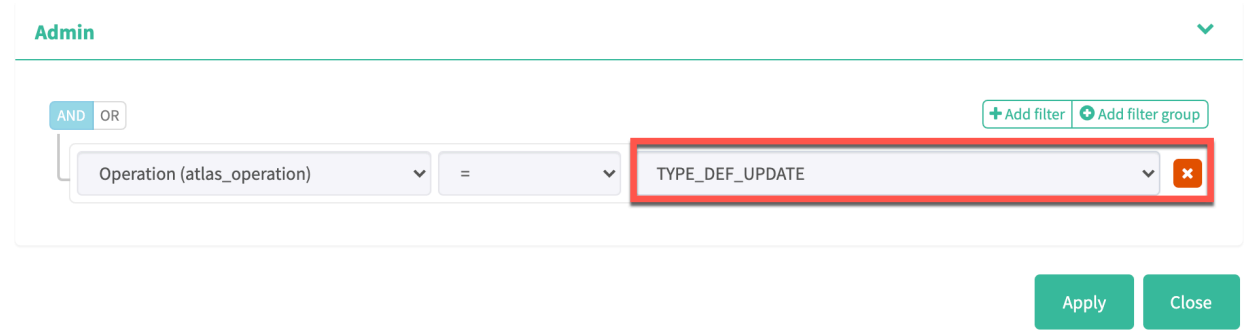
Using Type Definitions, you can create, update, and delete entities of various types.

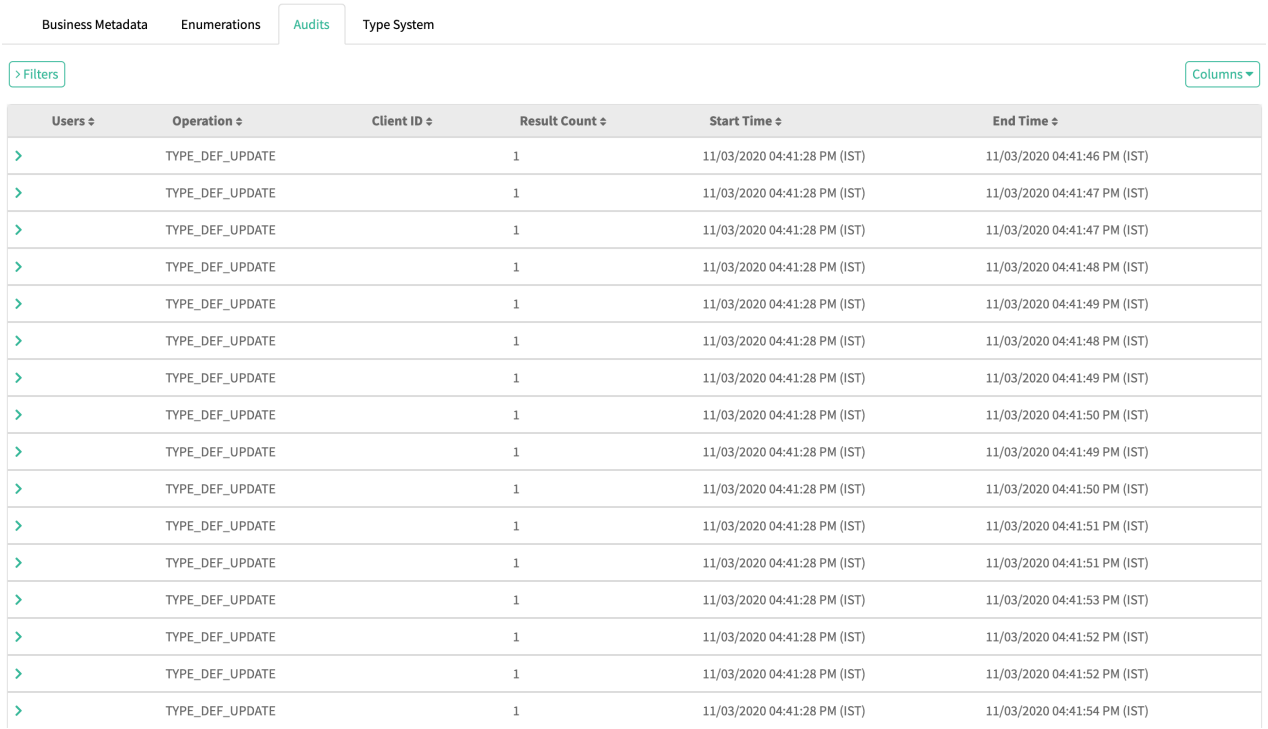
An example of Type Definition - Create



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)

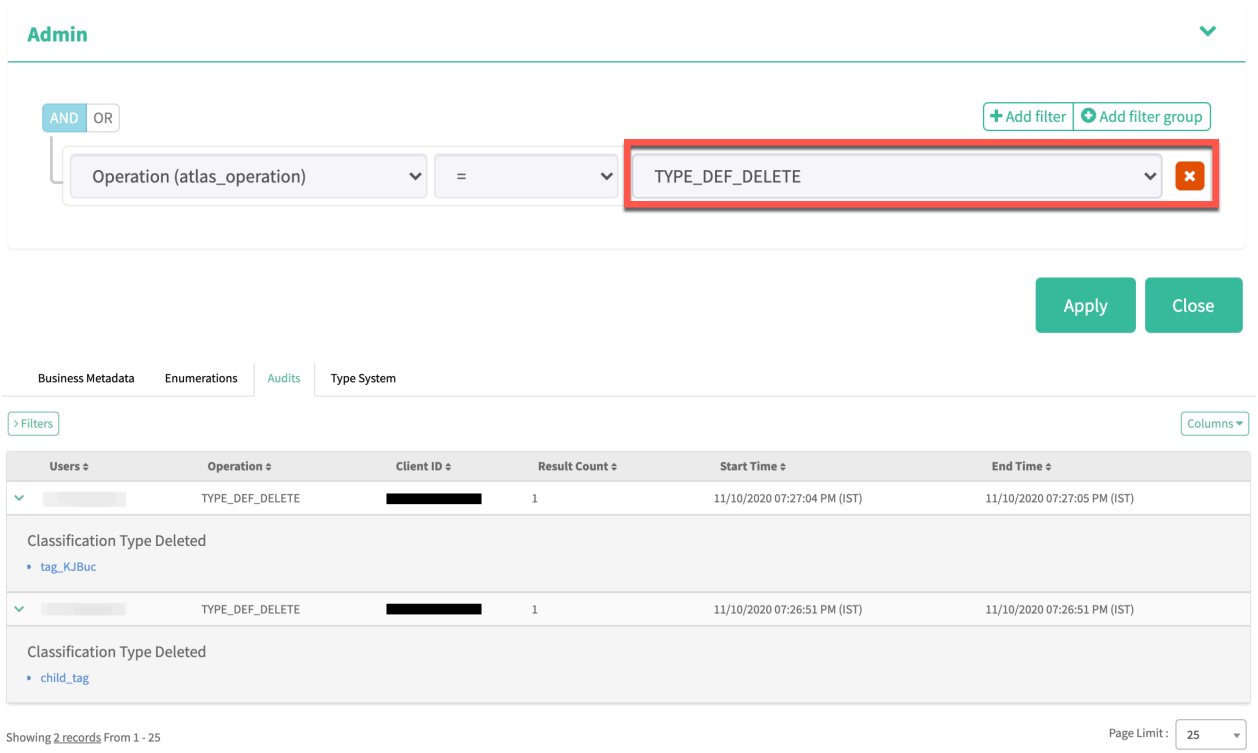
An example of Type Definition - Update





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)

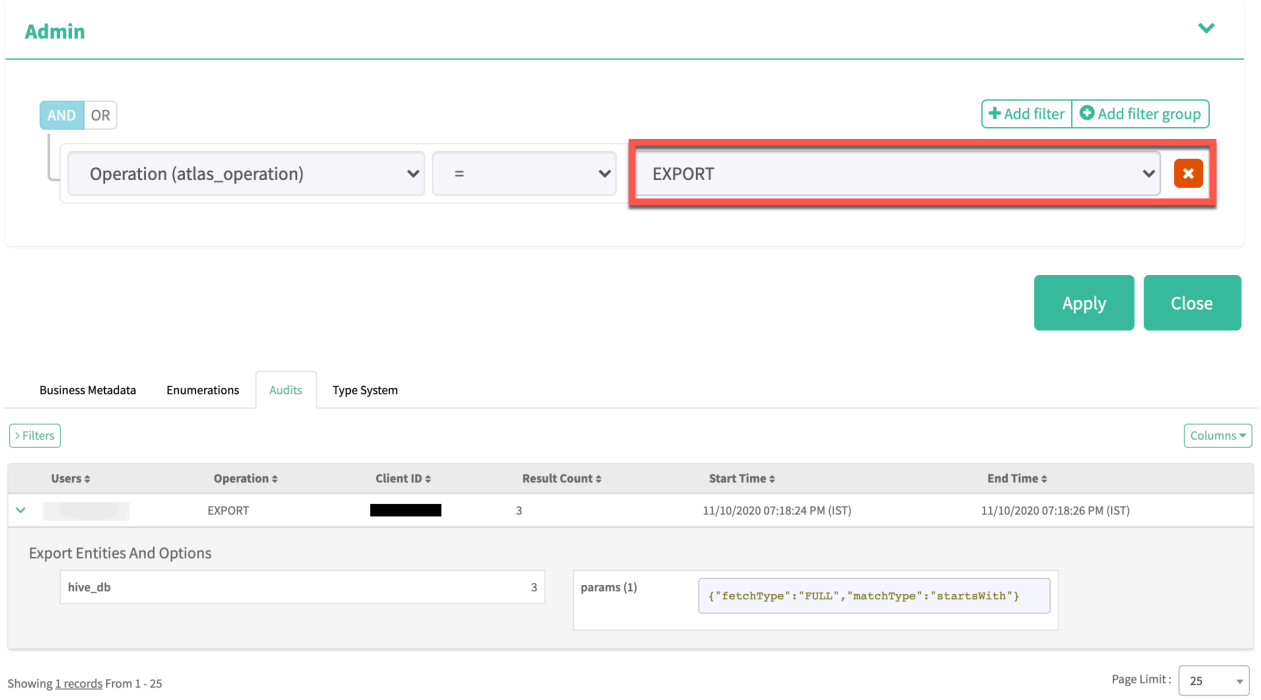
An example of Type Definition - Delete



Atlas Export and Import Operations

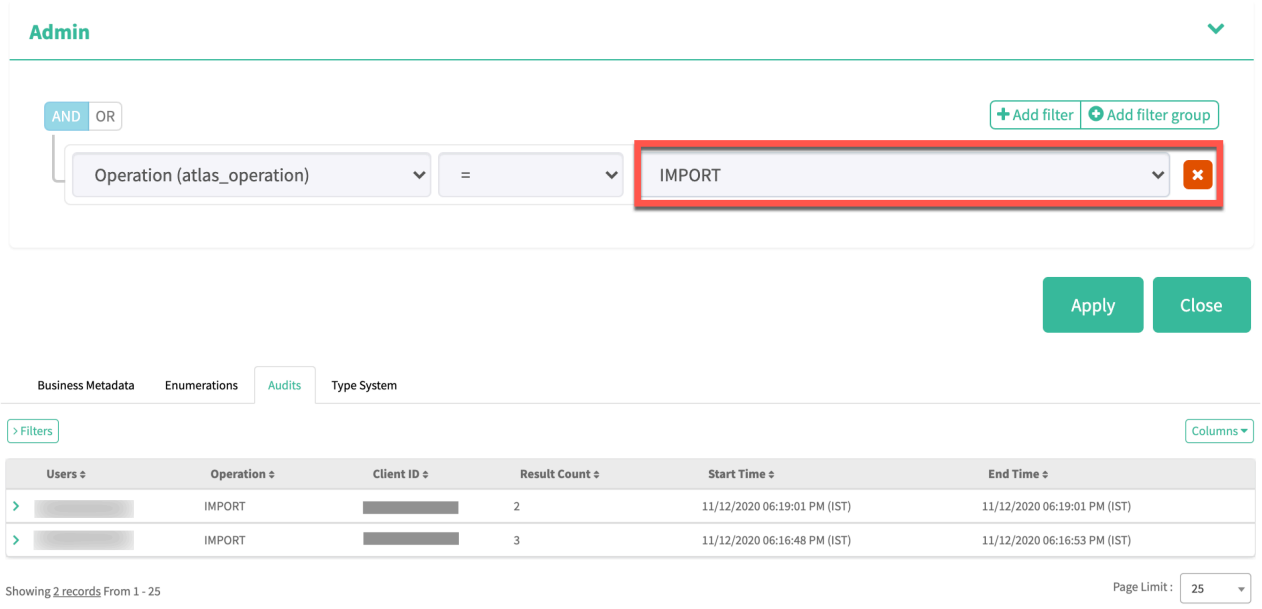
An audit entry is created for every export and import operation.

An example of - Export operation



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

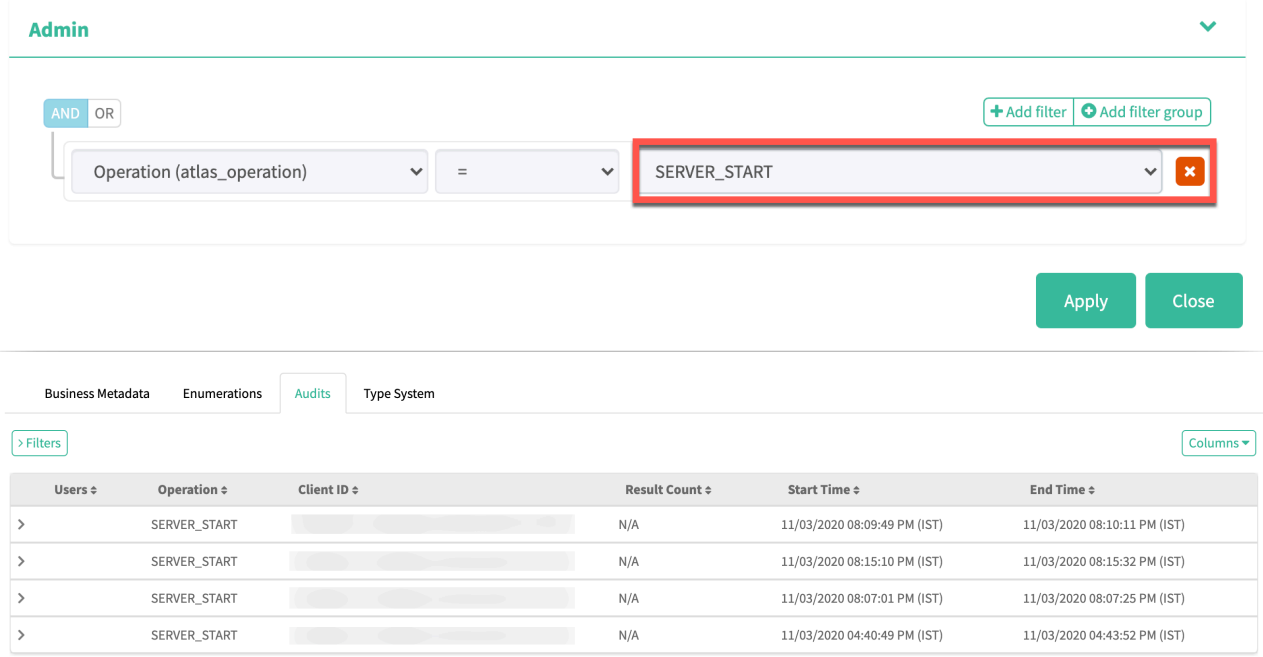


Atlas Server Operations

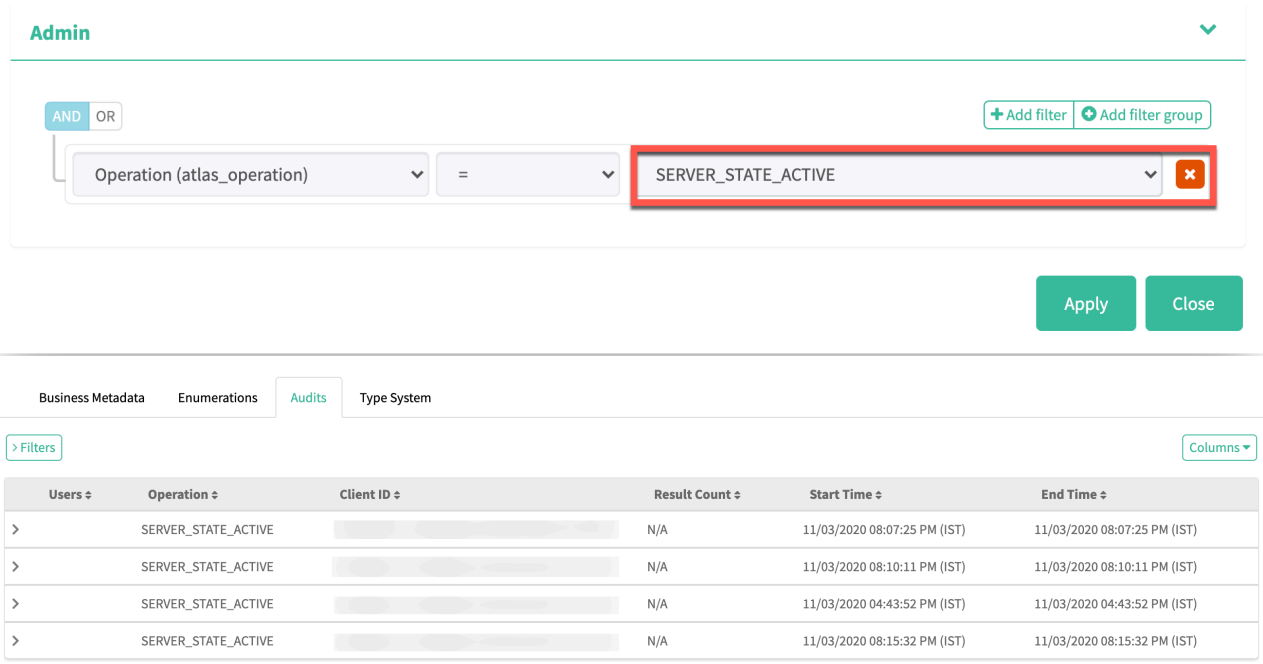
When you perform server related tasks, audit entries are logged.

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



An example of - Server State Active operation



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.

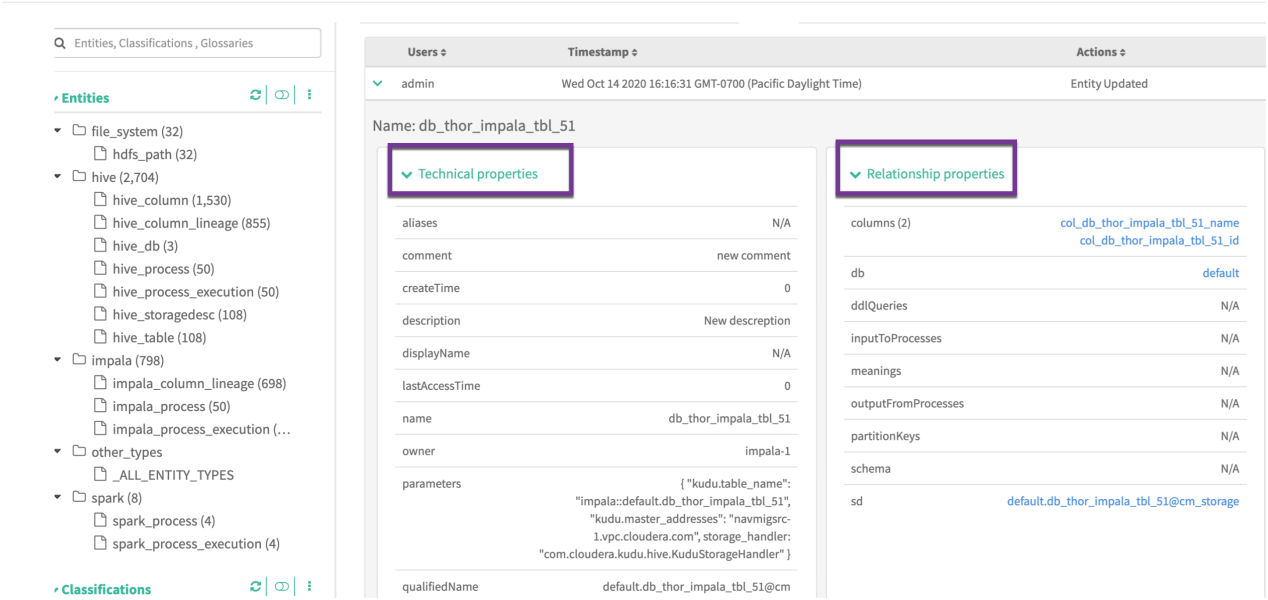
You must enable the application flag by setting the parameter using:

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.

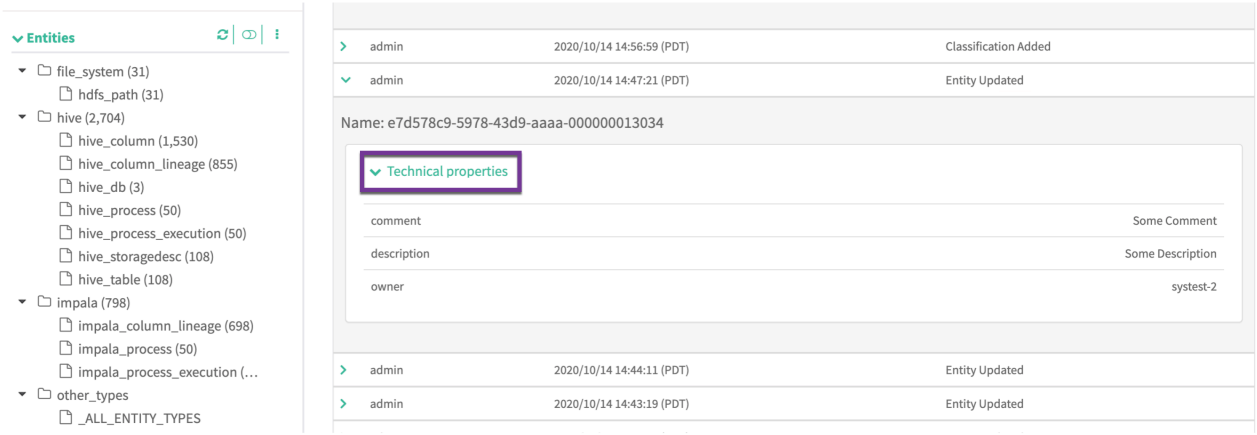
atlas.entity.audit.differential=true

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

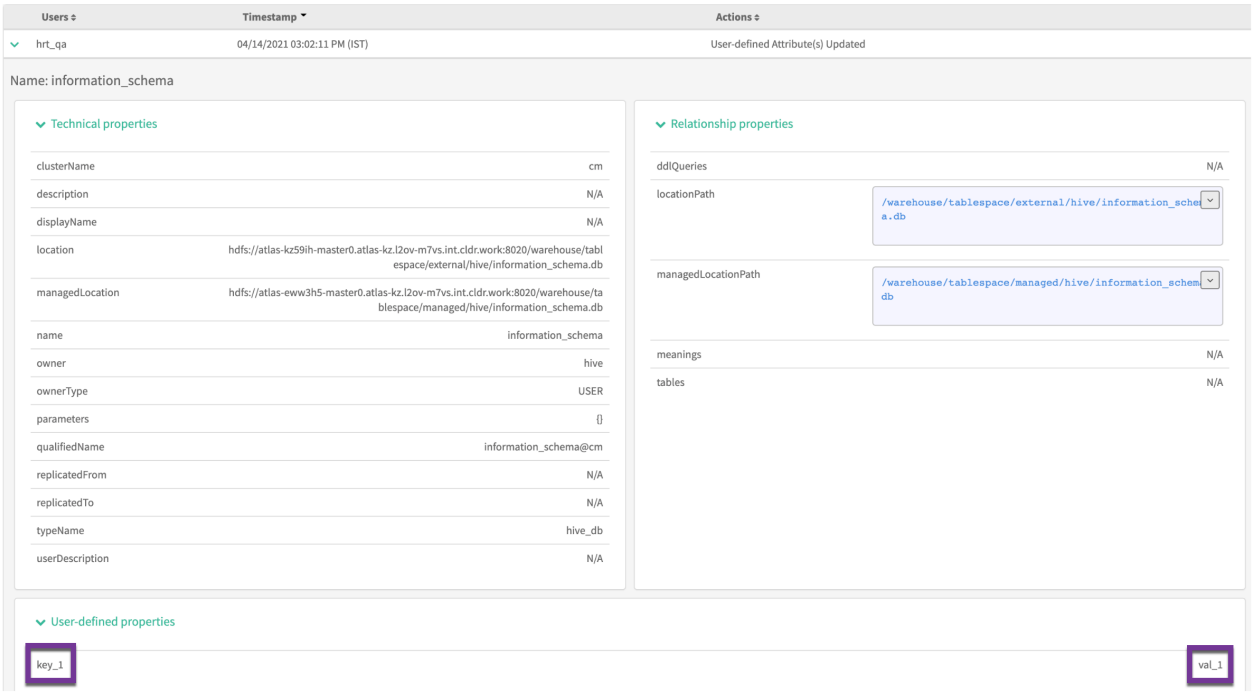
Previously, Atlas exhibited full entity as shown in the image:



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.



Currently Atlas displays only the changed or updated entity values.

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.
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/typ
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.