Cloudera Runtime 7.3.3

# Atlas Classifications

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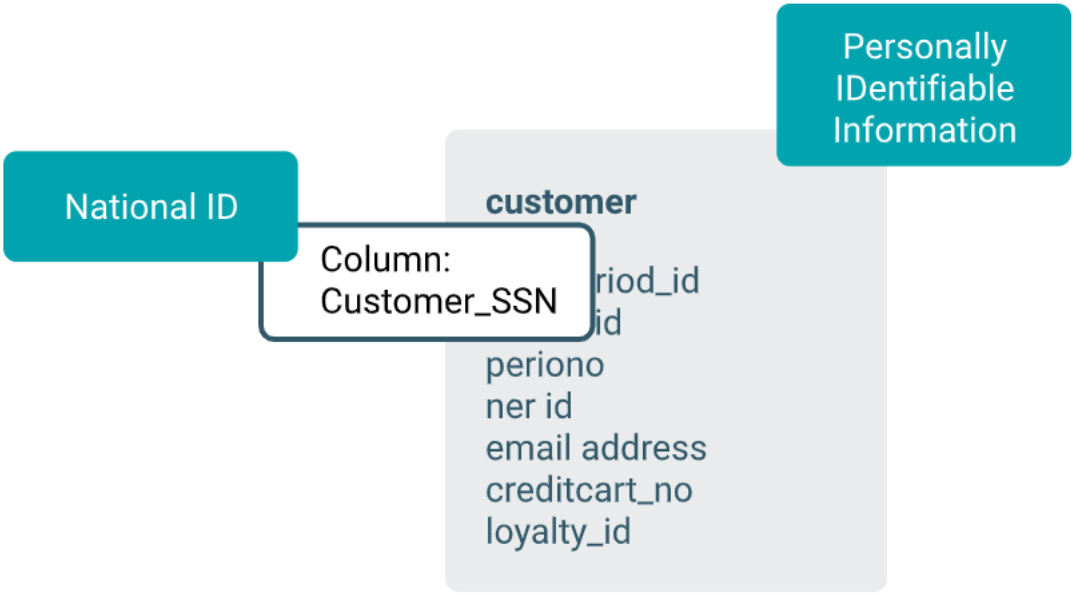
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# Working with Atlas classifications and labels

Add metadata to Atlas entities using labels and classifications.

You can add metadata to Atlas entities to help your organization find, organize, and share your understanding of the data assets that drive business processes. Atlas provides two mechanisms for adding metadata to entities: labels and classifications. Both labels and classifications can be applied to entities to help describe the entity's content, status, or other business-driven value.




**Labels**

Labels are words or phrases (strings) that you can associate with an entity and reuse for other entities. They are a light-weight way to add information to an entity so you can find it easily and share your knowledge about the entity with others.

Anyone can create labels and associate labels with entities.

**Classifications**

Classifications are strings like labels, with added complexity and structure:

- Atlas includes precise search tools for finding entities using classifications.
- Classifications can automatically propagate to additional entities through lineage relationships.
- You can use classifications to drive access control policies in Ranger.
- You can enrich a classification with attributes in the form of key-value pairs and set the value to describe a particular entity.

Administrators can control who can create and assign classifications through Atlas policies in Ranger.

In short, use labels for annotating entities; use classifications to involve entities in processes inside and outside Atlas.

## More about classifications: attributes

You can add key-value pairs, or *attributes* to the definition of a classification. A typical use for classification attributes would be to refine the meaning of a general category. Data assets identified with a classification of “PII” or Personally Identifiable Information can have classification attributes that indicate the nature of the information to drive data masking or expiration policies. Columns tagged with “PII” might be further separated into phone numbers, credit card numbers, and “other.” A Ranger policy based on the classification can use the attribute values to identify masks for the phone and credit card numbers and to block columns tagged as “PII” with attribute “Other.”




### Planning for classifications and labels

Here are some questions to help you think about how you define classifications and labels in your system:

- Will you use the metadata to drive a workflow outside of Atlas? If so, use a classification. If not, a label may work fine.
- Do you need the text of the metadata to be exact values? You can limit who has the ability to create classifications: you can manage a single list for an organization. The ability to apply a classification to an entity can be controlled separately from defining classifications, which let's you potentially allow more users to applying the "official" classifications. Any users can create and add labels to entities, so it may be more difficult to standardize the content of labels.
- What types of entities do you expect the metadata to apply to? Labels can be added to any entity type; classifications can be defined to apply to a specific entity type. If you define a classification to only to apply to certain entity types, such as table columns, make sure that the name and description helps data stewards use the classification correctly.
- Are you adding metadata to make Atlas searches easier? Consider using classifications with attributes to allow refinement of search results. If your Atlas users are more likely to search using *terms*, you might consider connecting the classification to a glossary term so searches from either mechanism return the correct results. (Assigning the term to an entity automatically assigns the classification to the same entity.) For both labels and classifications, consider setting guidelines so everyone creating metadata uses the same conventions: underscores or hyphens? detail first or last? table-level metadata or column-level?
- Do you want a classification to follow lineage relationships and be assigned automatically as data is used in other entities? If not, you can use the classification description to help data stewards understand that they should turn off propagation when assigning this classification to entities or terms. Labels do not propagate.

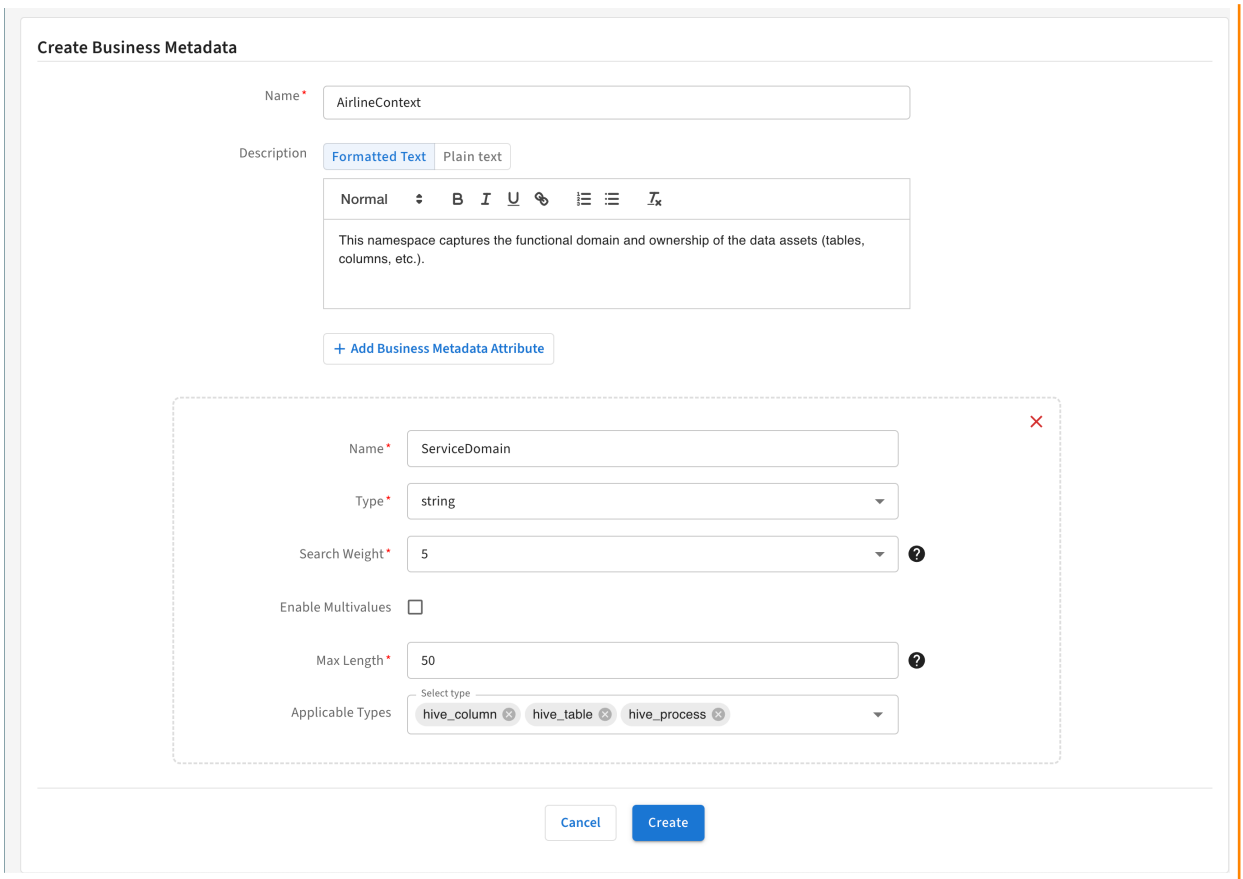
## Text-editor for Atlas parameters

In Atlas, while creating Classification, Glossary, and Business metadata, a new text editor is available, which can also be used for adding and customizing string attribute values of Business metadata on the Entity details page.

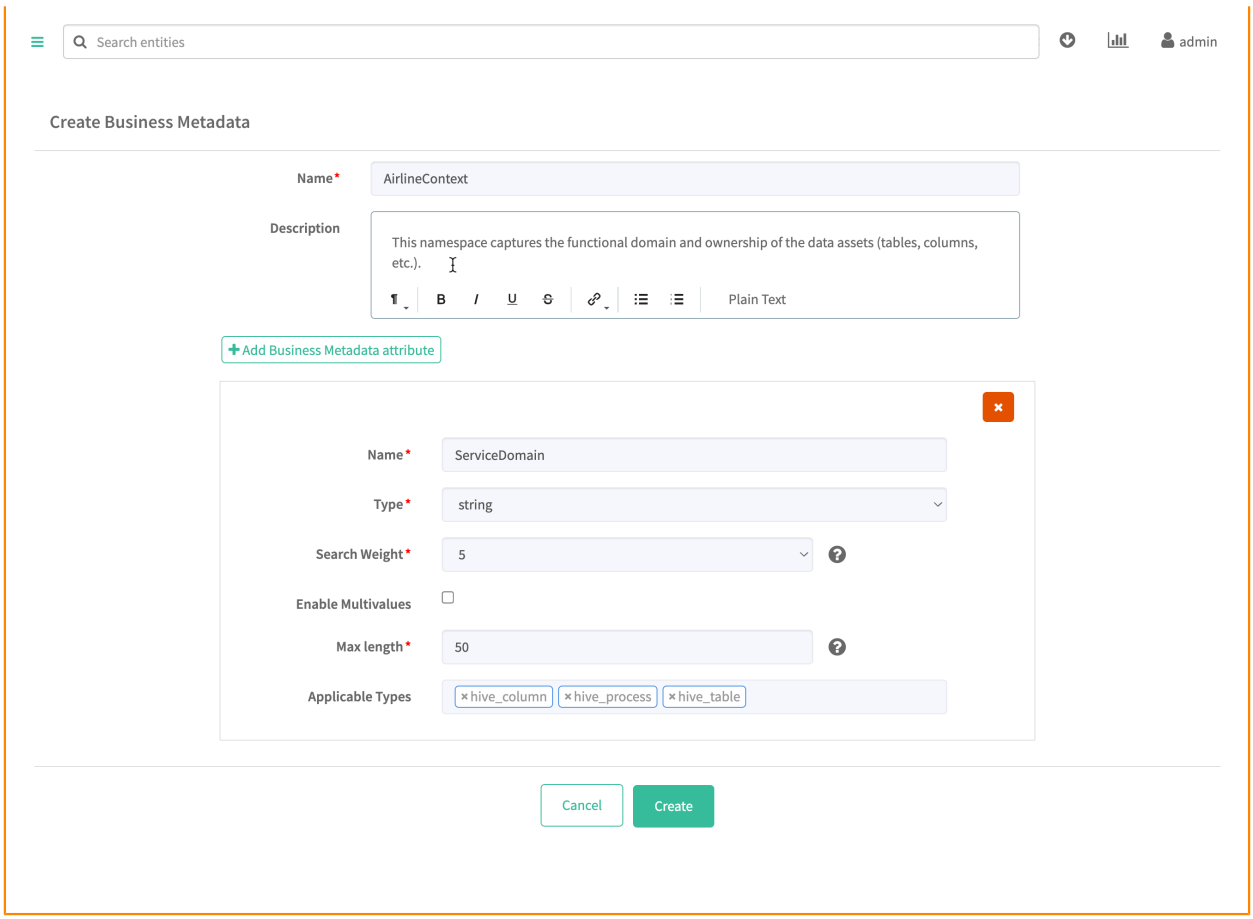
On the **Entity Details** page, when you add the business metadata and select the attribute type as String, you can view a text editor with which you can customize content, description that is entered.

**Important:** While adding a Business metadata attribute, you must select the “Type” as “String”. If you do not fulfill this criteria, you cannot add formatting to the value of the attribute using the text-editor on the **Entity details** page under the **Business metadata** tab.

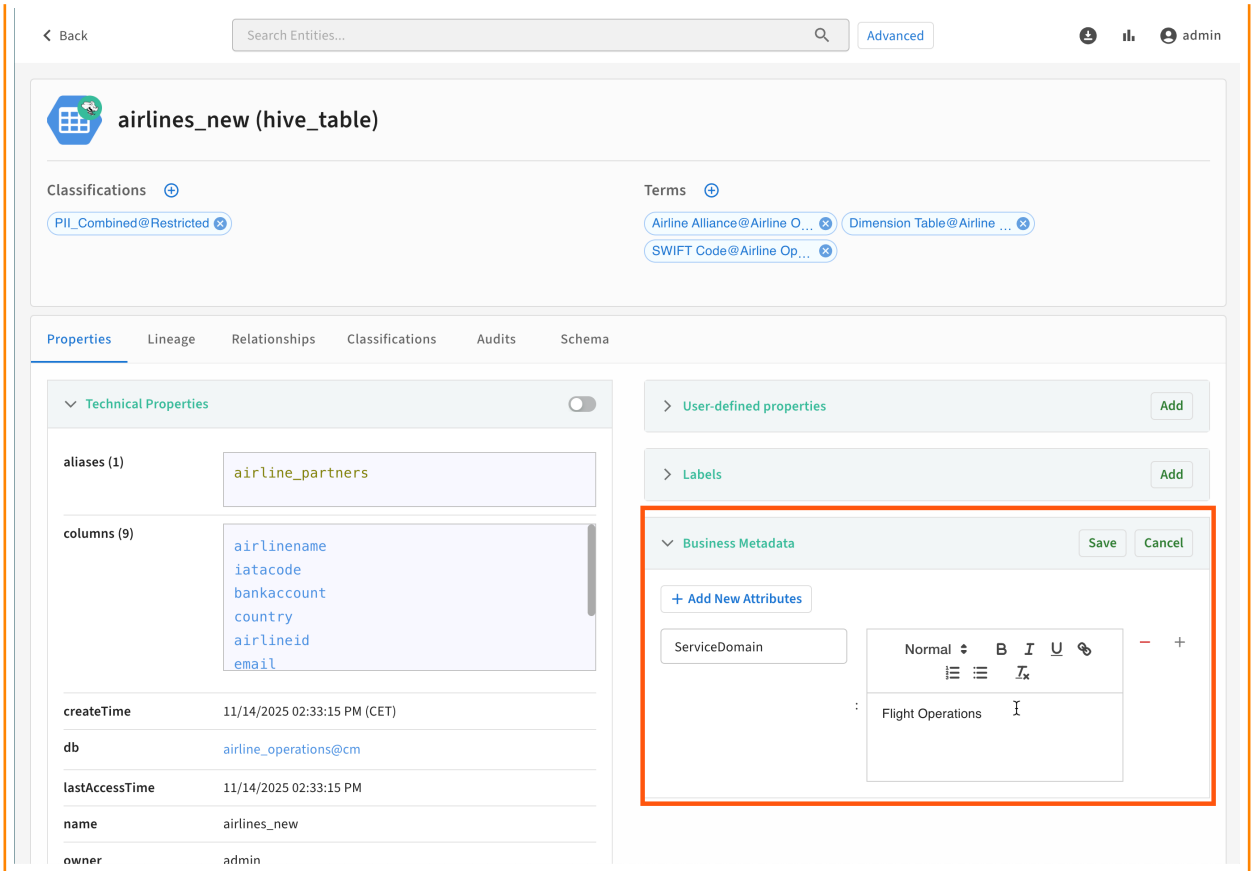
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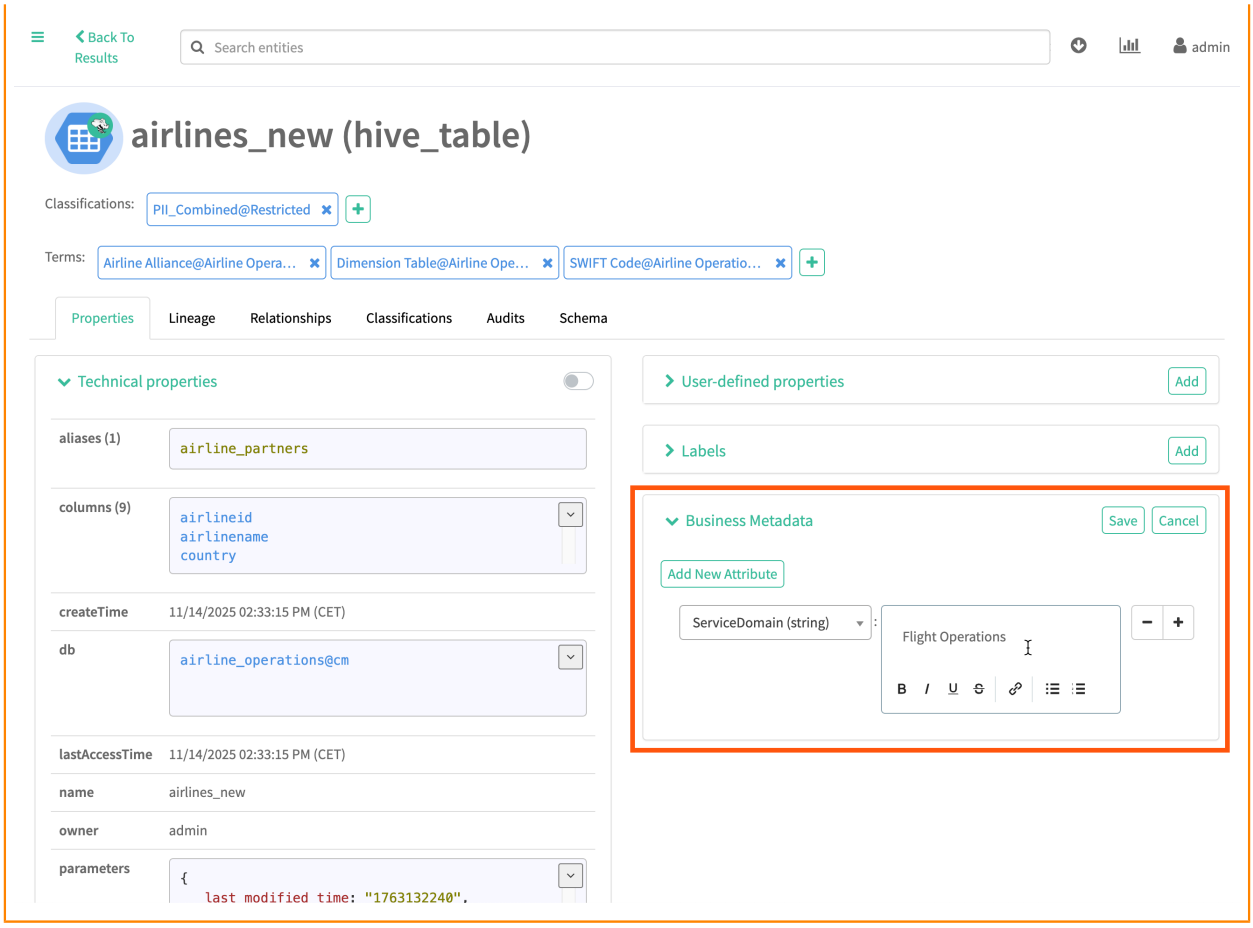

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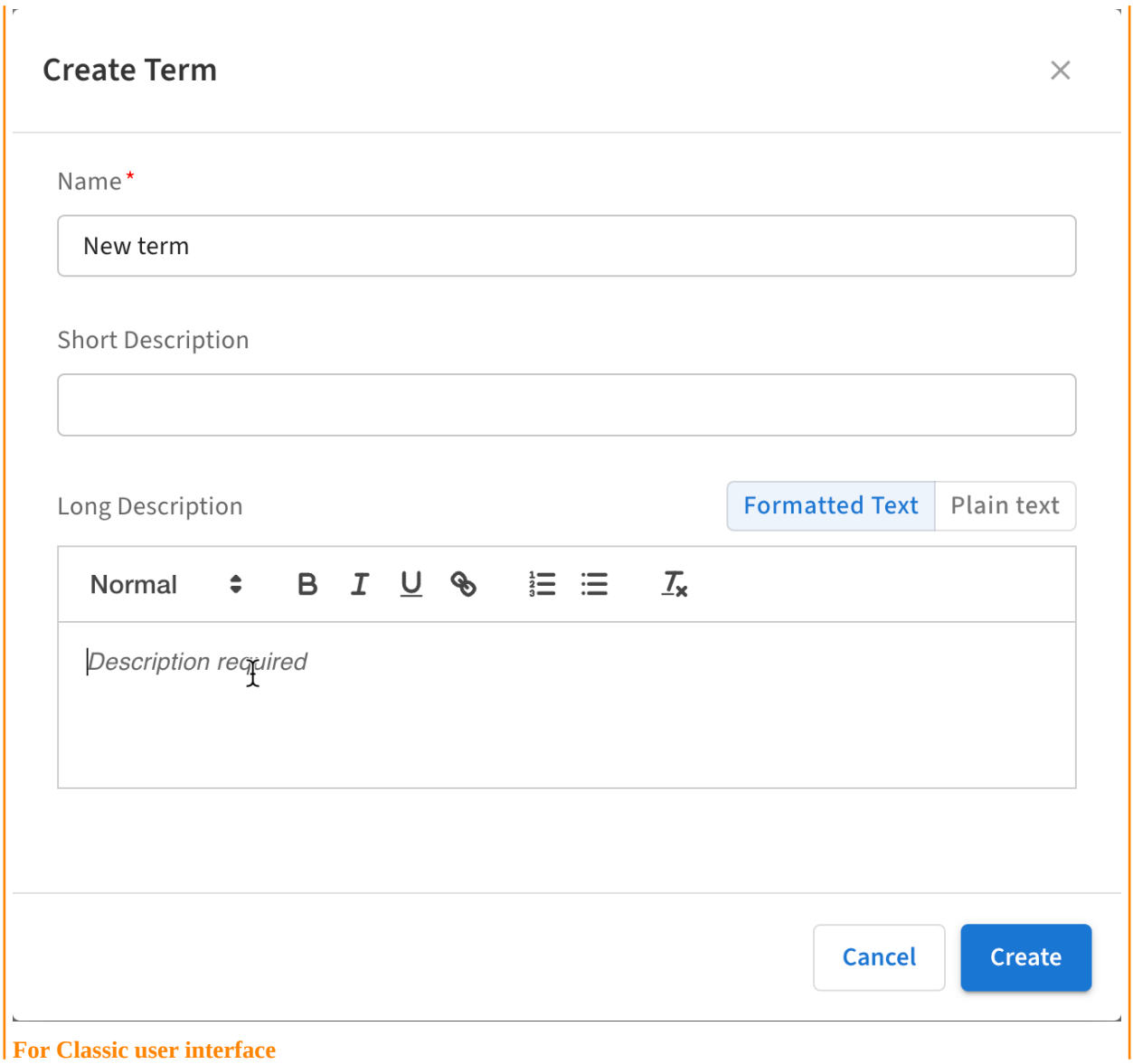



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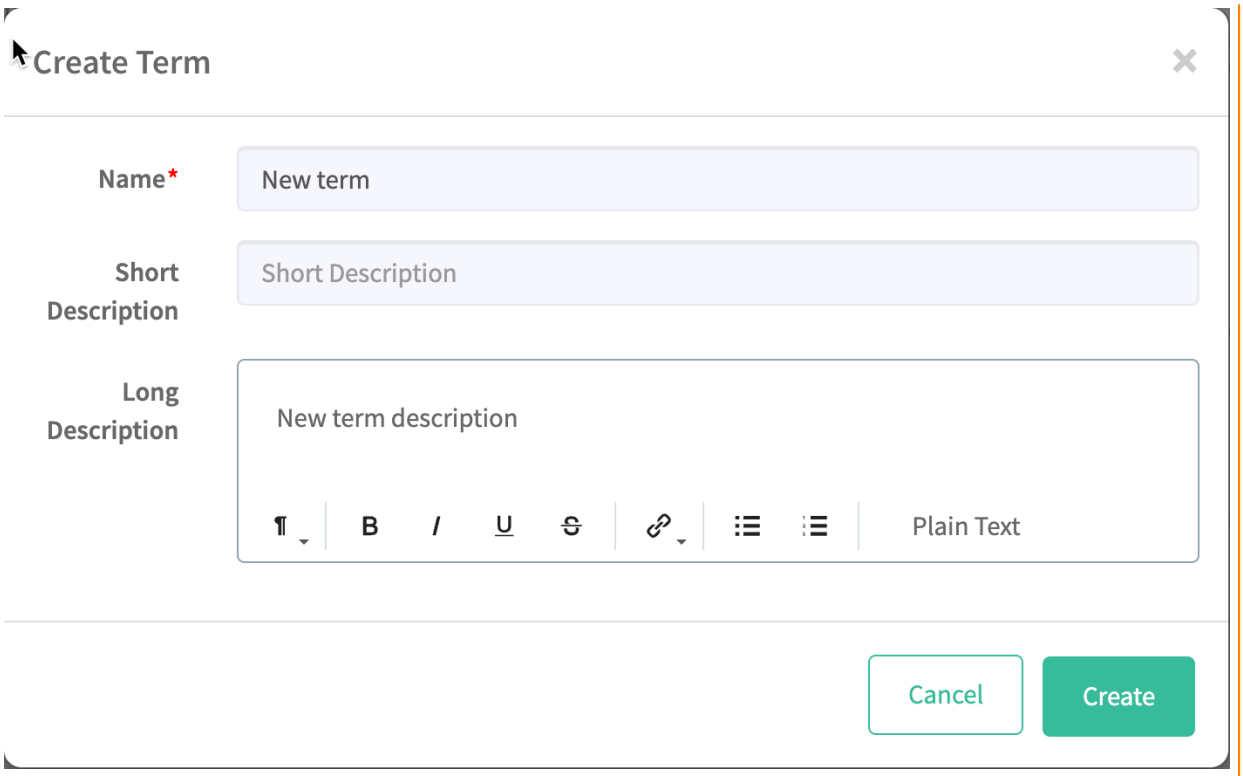



Note that while creating and editing Glossary, Term, and Category, the text editor is available only for the **Long Description** field. For creating and editing Business Metadata and Classification, the text editor is available only for the **Description** field.

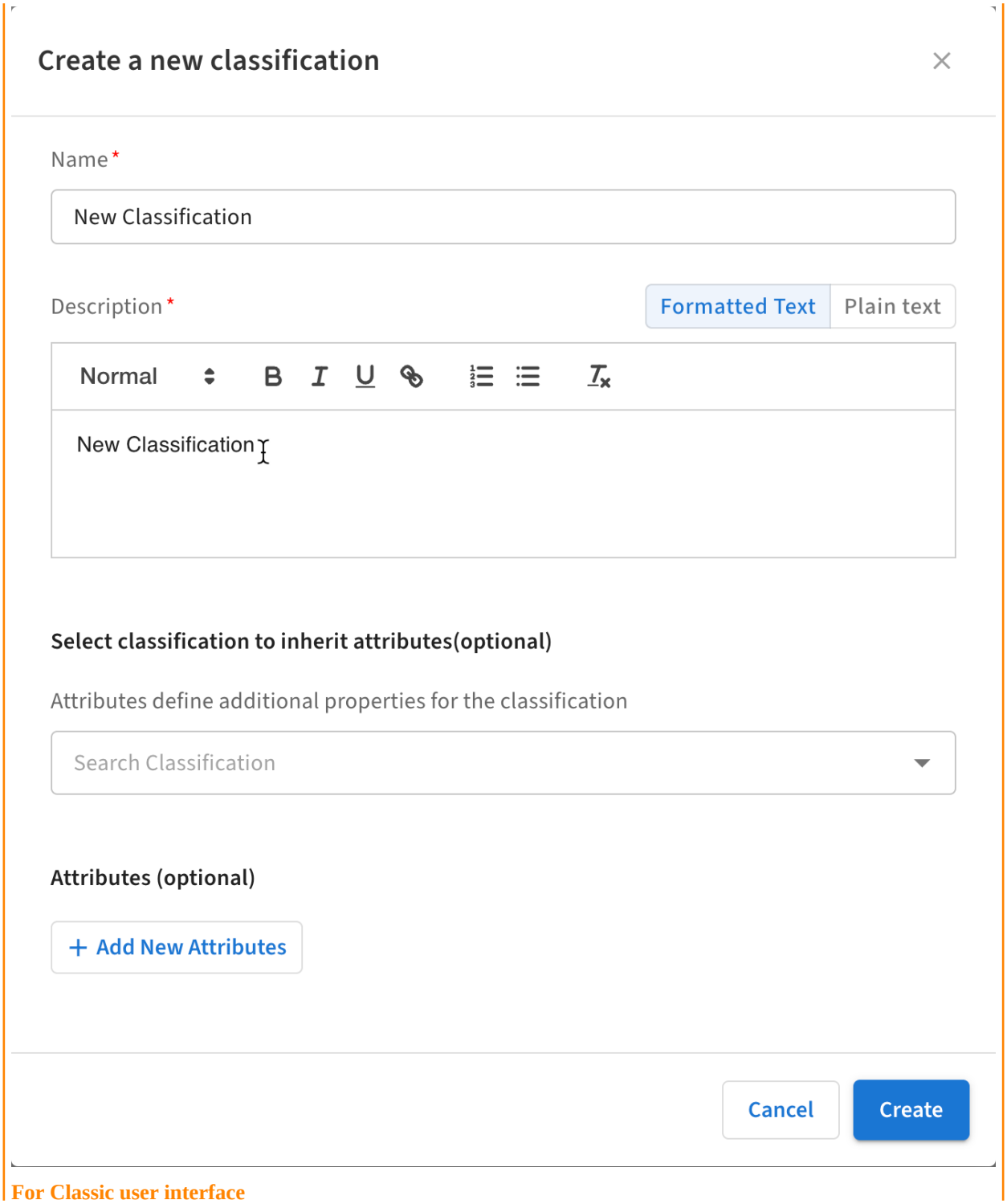
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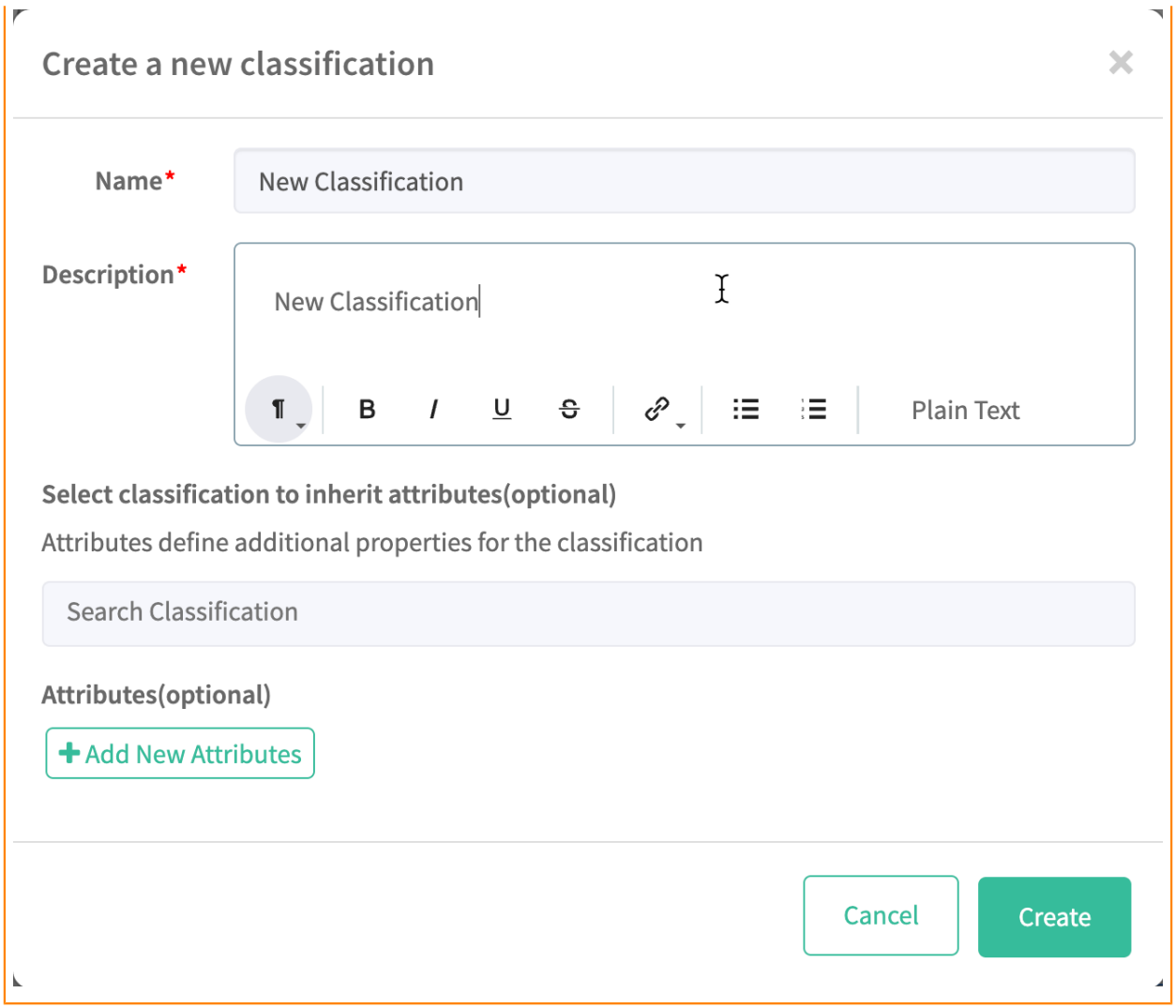

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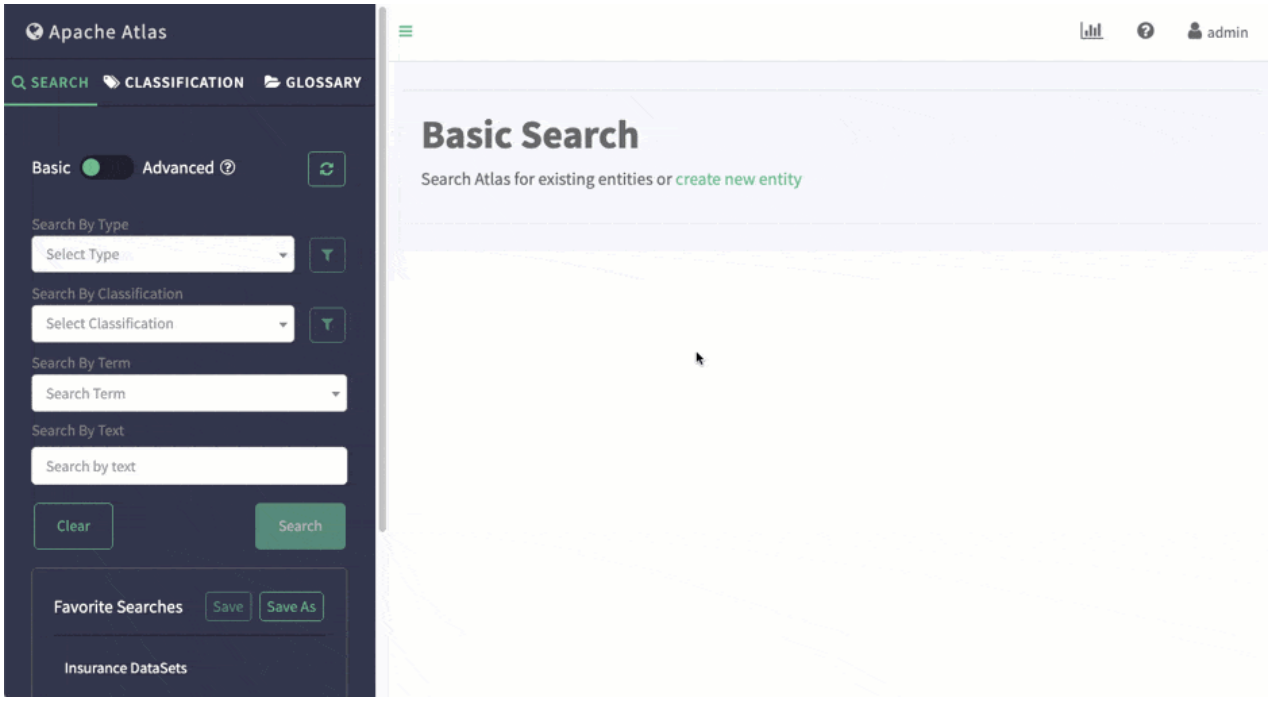

For Classic user interface




# Creating classifications

Create classifications from the tab in the left navigation bar.

Create classifications from the Classifications tab in the left navigation pane.




Names can be 255 characters and contain ASCII characters and spaces. Descriptions can be 1024 characters and contain any characters.

When creating a classification, you can choose an existing classification to reuse its attribute definitions.

## Example for finding parent object for assigned classification or term

You can view and search for Atlas entities by using the assigned name for the classification or term.

When you create an entity and assign a classification or term to the entity, the immediate parent of the assigned classification or term is displayed when you hover over the classification or term. The parent-child relationship lineage appears in the assigned @parent1, parent2, parent3 format, depending upon the number of parent-child relationships. Click the assigned classification and term to view the details.

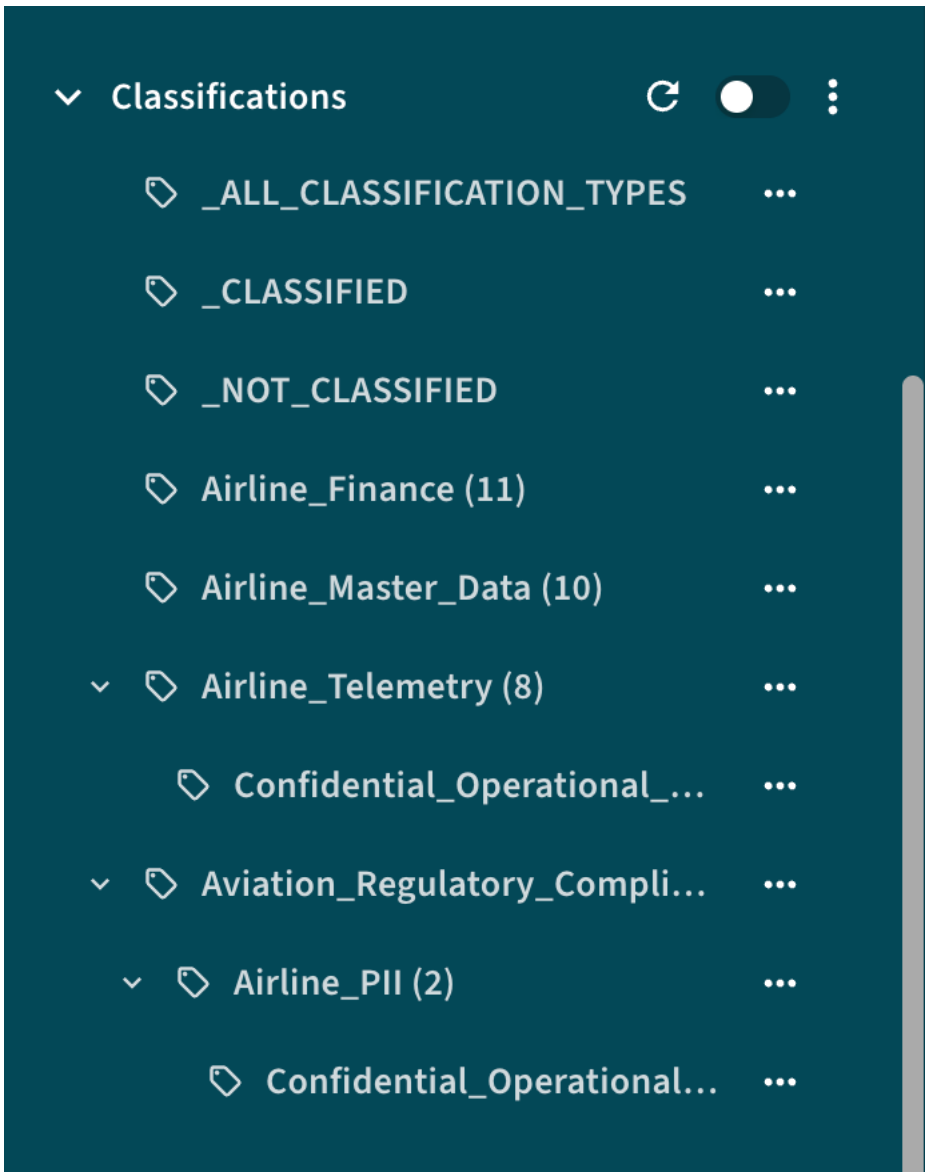
### Finding parent classifications

As an example, assume that there is an entity called **Customer_360_View** for which a classification named **Confidential_Operational_Analytics** is assigned. Under the **Classification** tab on the Atlas user interface, you can search for the list of classifications and their child classifications, including child classifications another level deeper and so on.

The following image provides an example of how a classification is listed in Atlas.

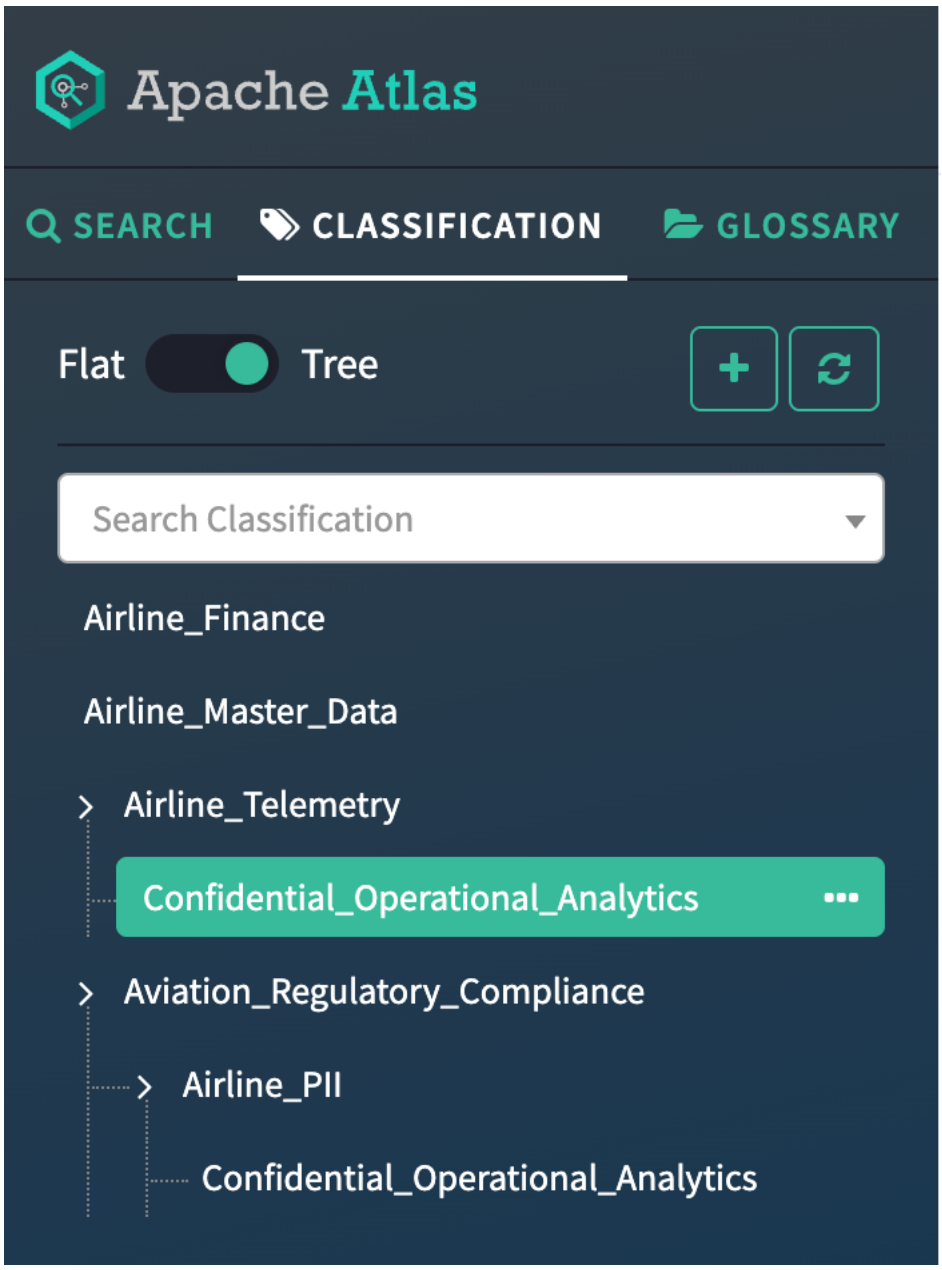
**For New User Interface**

**Figure 1: Classification tree in New UI**




**For Classic User Interface**

**Figure 2: Classification tree in Classic UI**

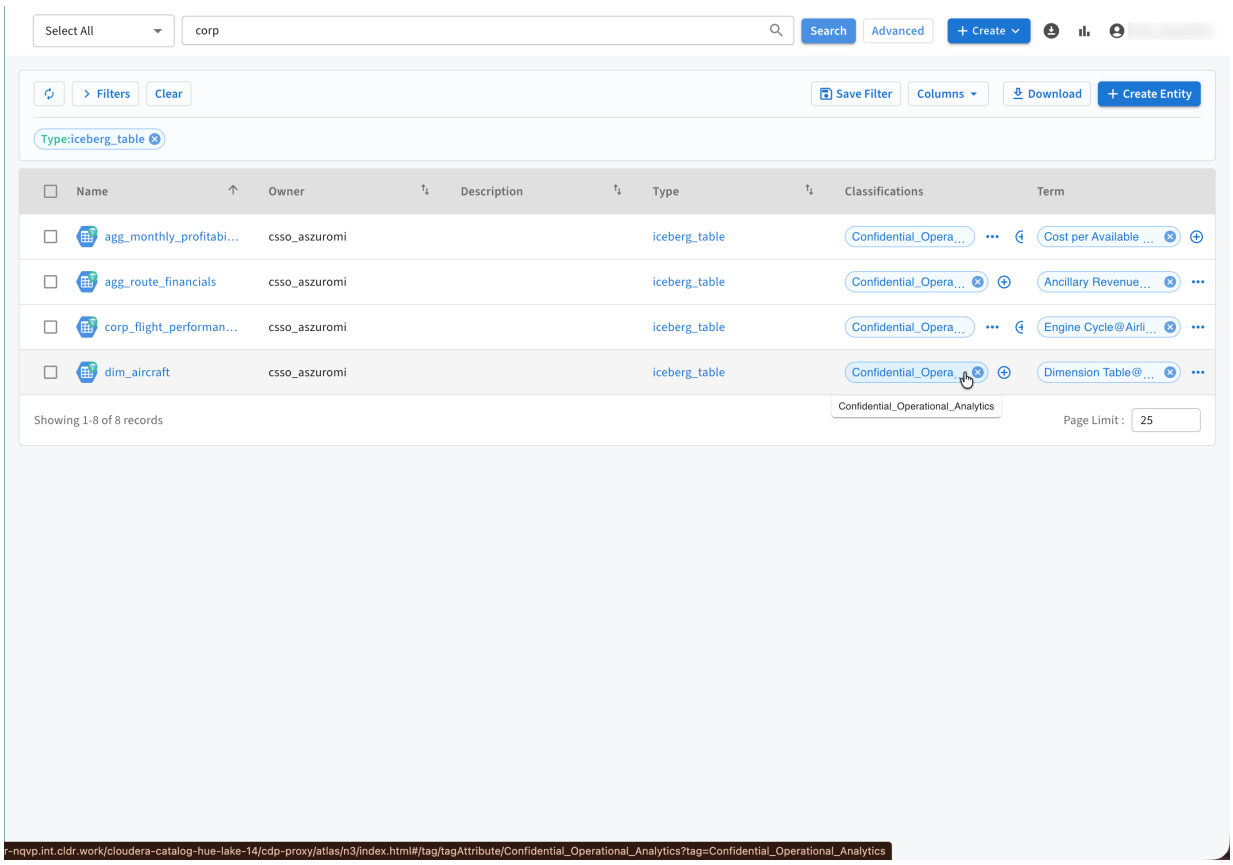



The classification named **Confidential_Operational_Analytics** has parent classifications named **Airline_Telemetry** and **Airline_PII** respectively.

In the following image, the parent classifications are displayed on an entity for which **Confidential_Operational_Analytics** is assigned.

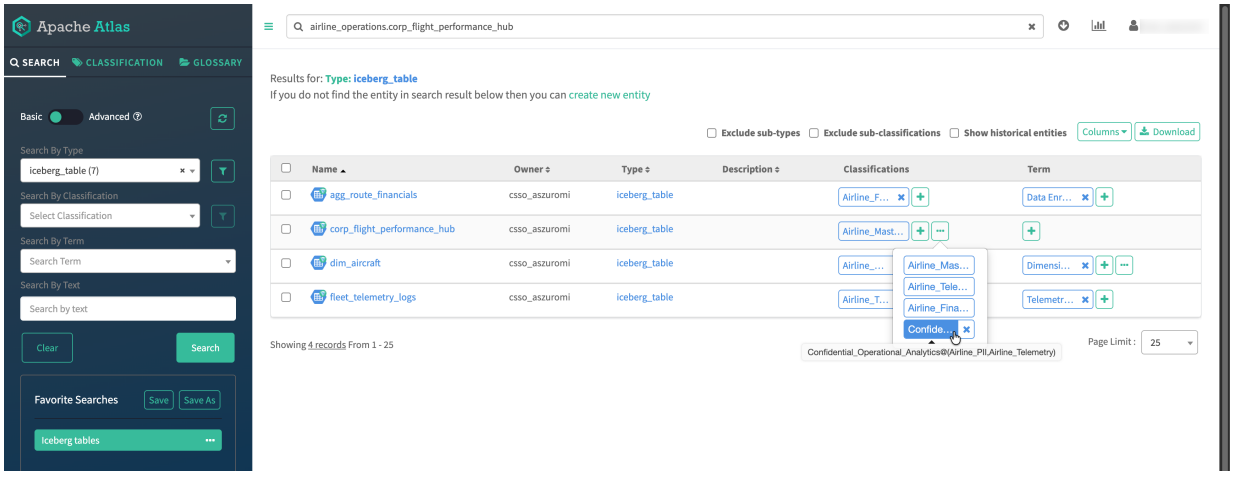
**For New User Interface**

**Figure 3: Parent classifications on an entity in New UI**




**For Classic User Interface**

**Figure 4: Parent classifications on an entity in Classic UI**

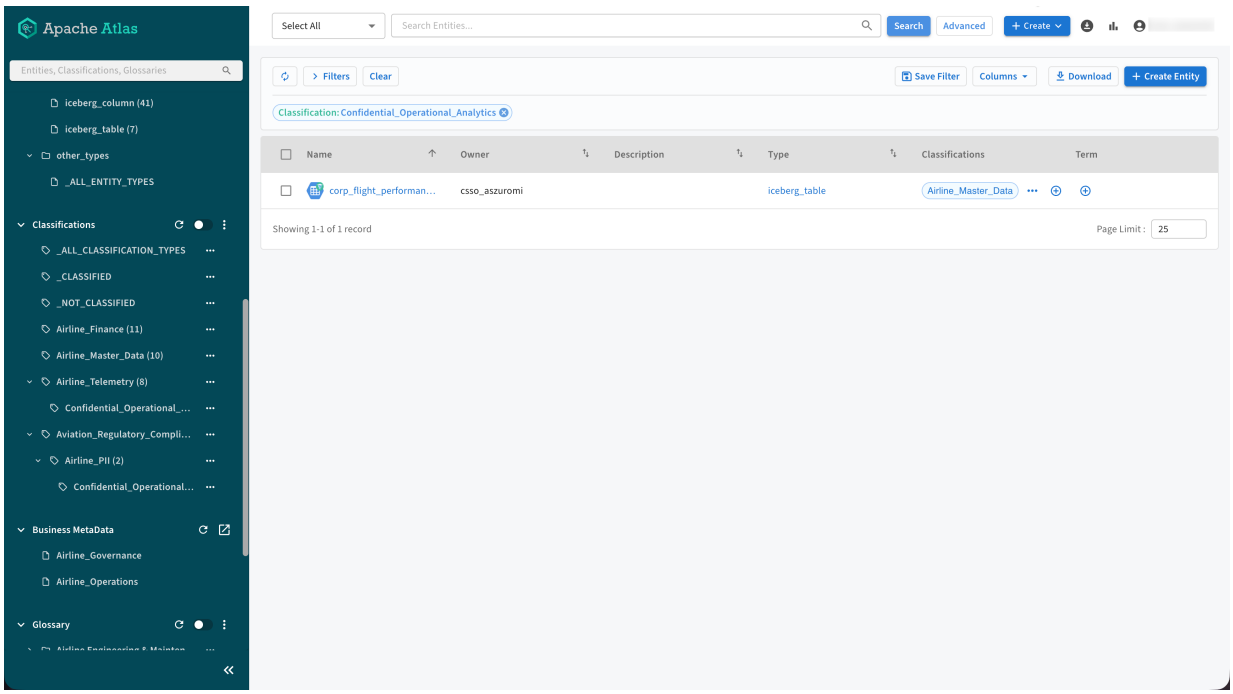



Hovering over the assigned classification displays the parent-child relationship. In this example: **Confidential_Operational_Analytics@(Airline_PII,Airline_Telemetry)**

Clicking on the assigned classification navigates to the classification details page.

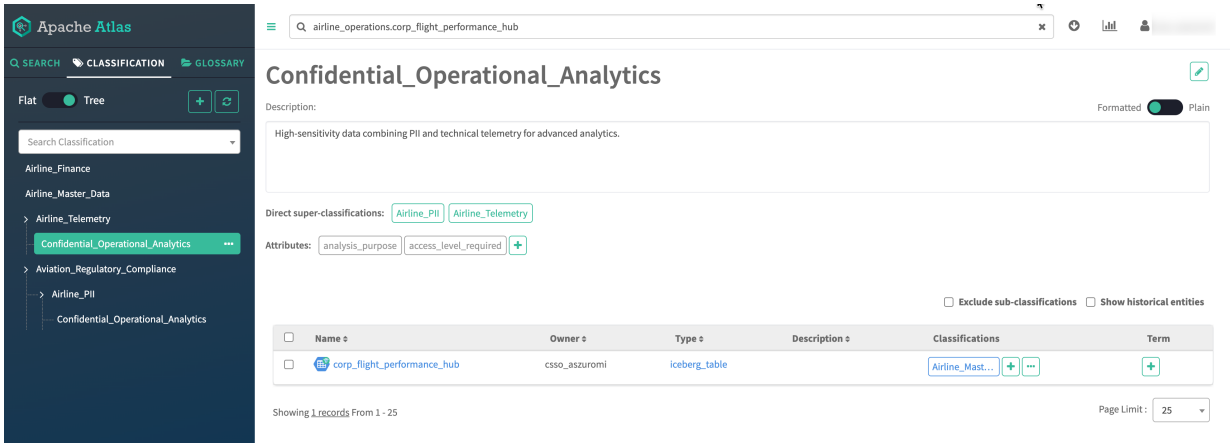
**For New User Interface**

**Figure 5: Classification details page in New UI**




**For Classic User Interface**

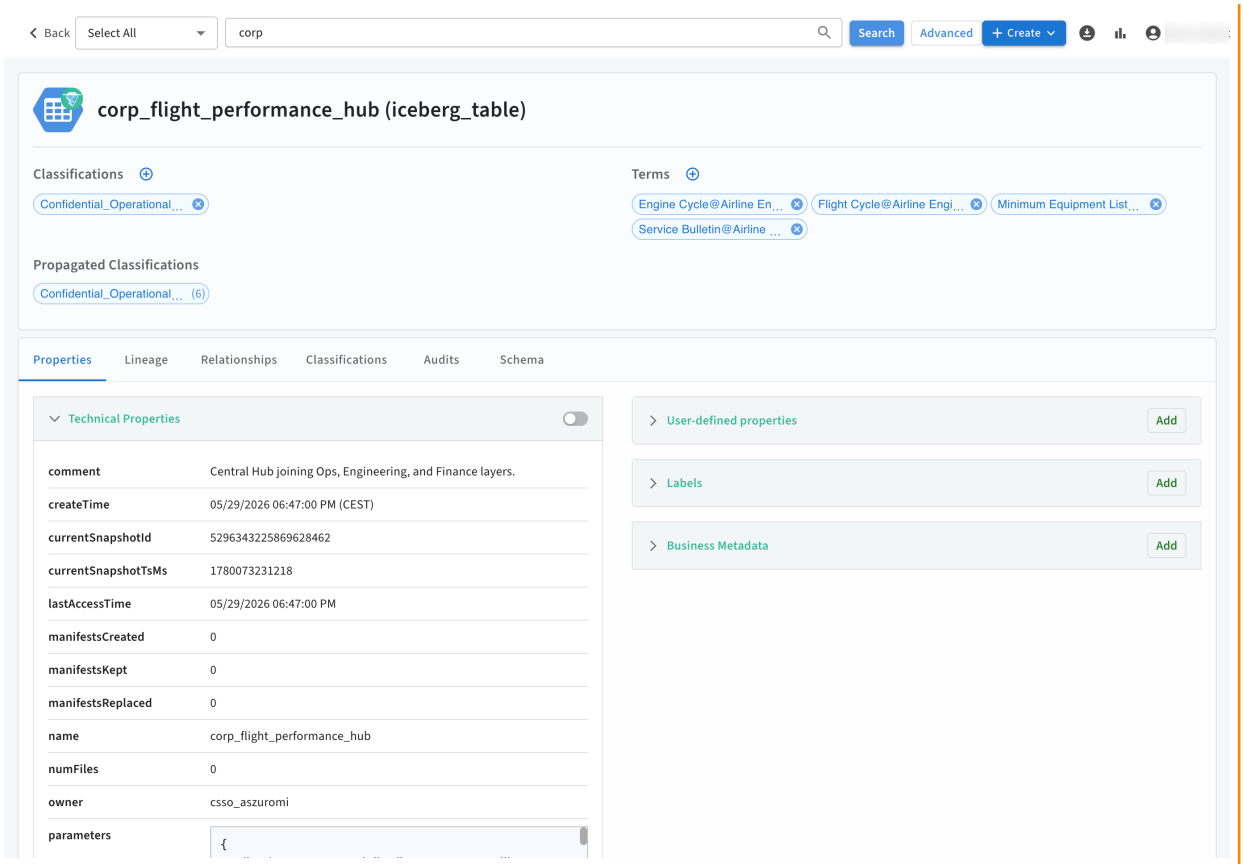
**Figure 6: Classification details page in Classic UI**




The entity page for the classification is as shown in the following image:

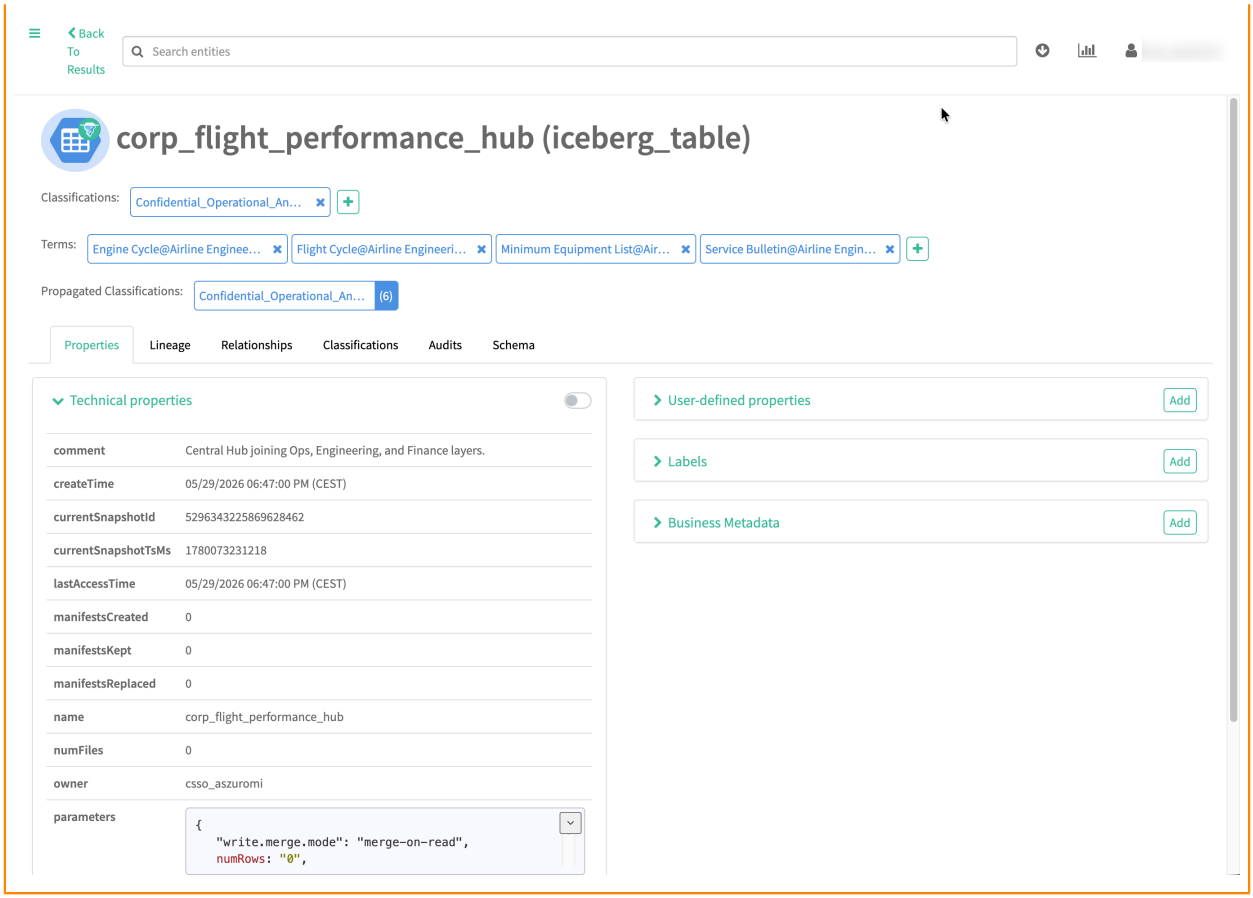
**For New User Interface**

**Figure 7: Classification entity page in New UI**




**For Classic User Interface**

**Figure 8: Classification entity page in Classic UI**

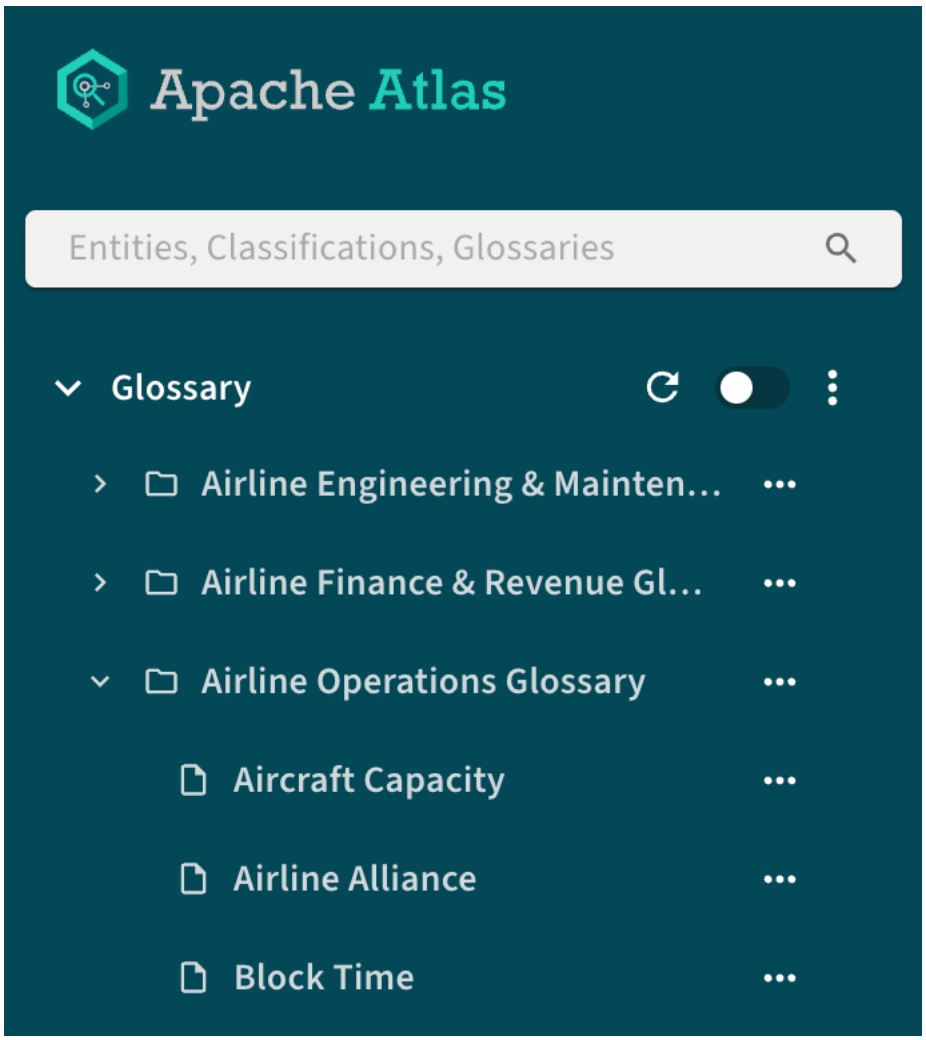



## Finding parent glossary terms

The following image provides an example of how GlossaryTerms are listed in Atlas.

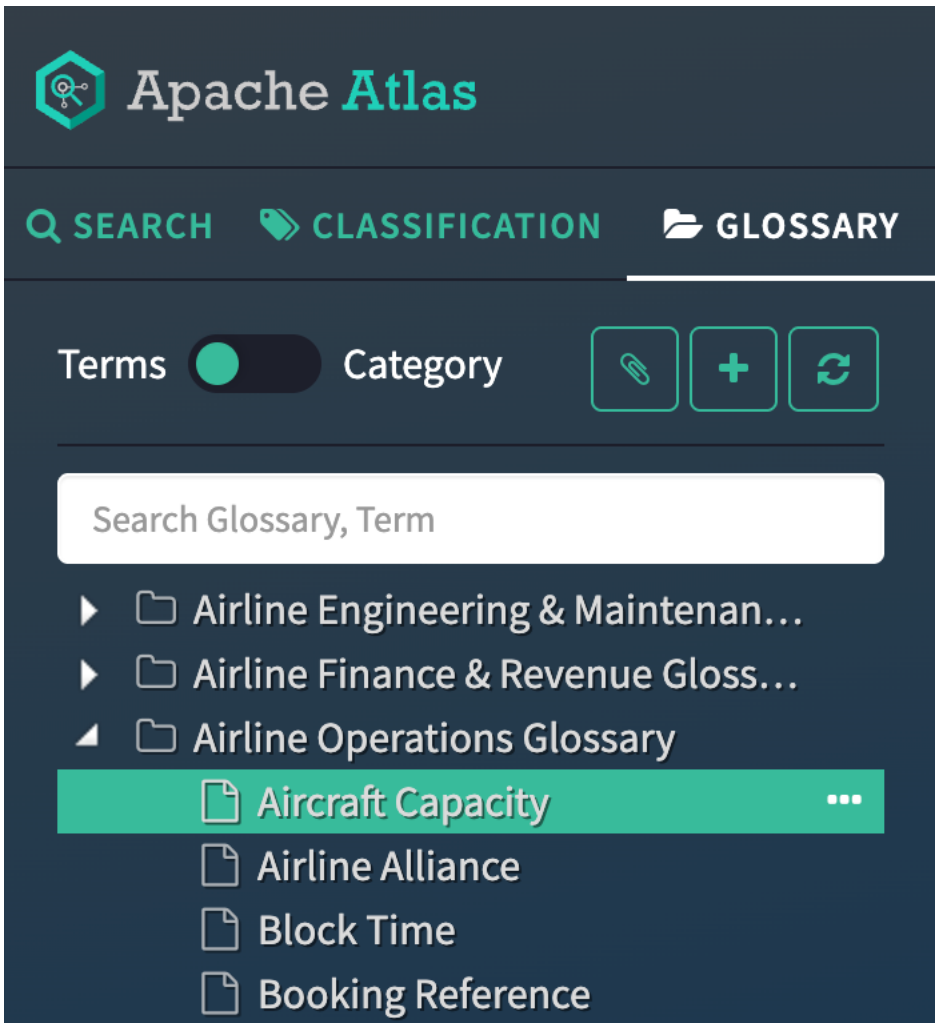
**For New User Interface**

**Figure 9: Glossary terms listed in New UI**




**For Classic User Interface**

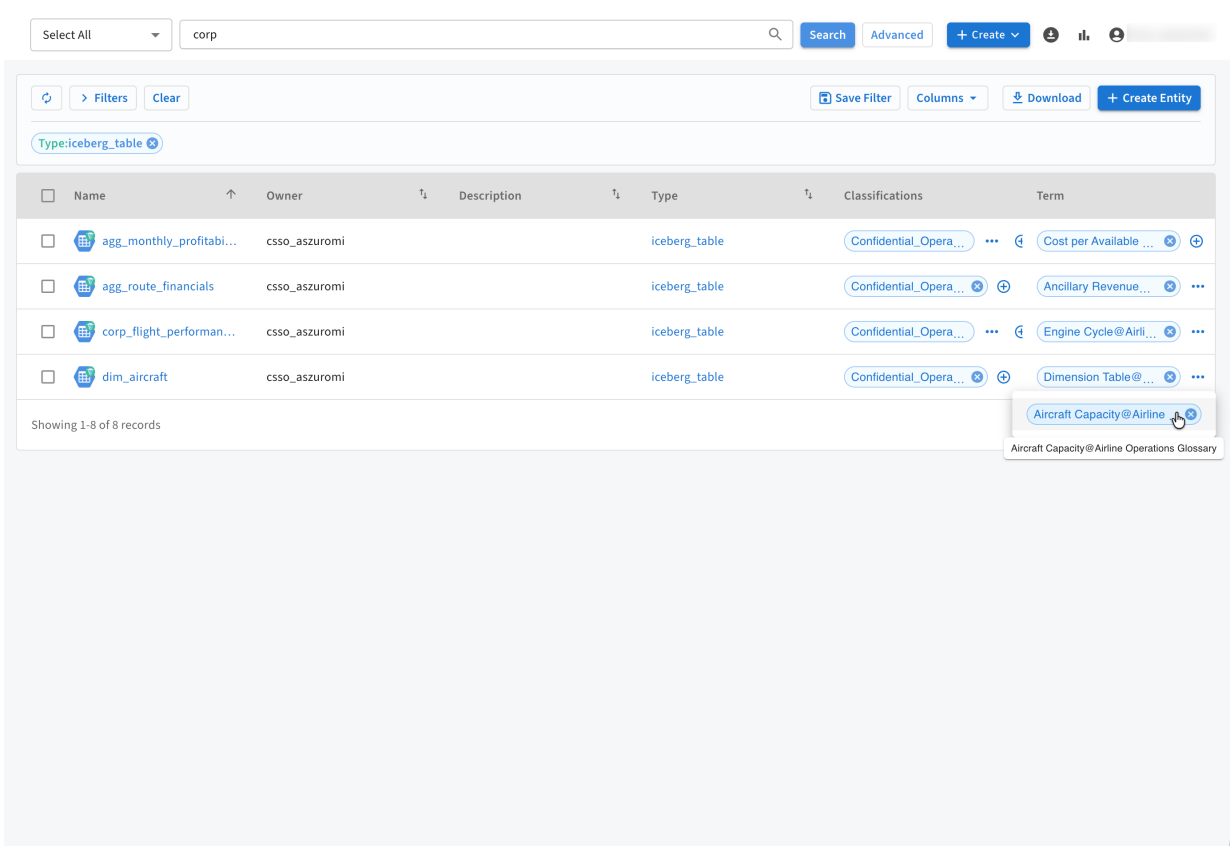
**Figure 10: Glossary terms listed in Classic UI**




The term named **Aircraft Capacity** has a parent glossary named **Airline Operations Glossary**, which is displayed on an entity for which **Aircraft Capacity** is assigned. The glossary of the term is visible for the assigned term in the assigned term@parent Glossary format. In this example: **Aircraft Capacity@Airline Operations Glossary**. Clicking on the assigned term navigates to the term details page.

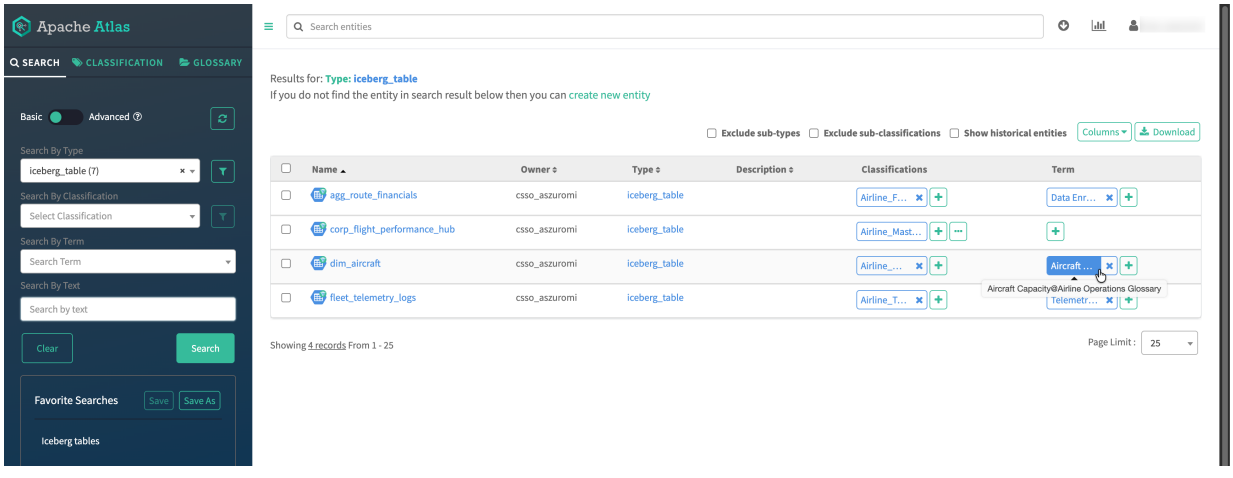
**For New User Interface**

**Figure 11: Parent glossary on an entity in New UI**




**For Classic User Interface**

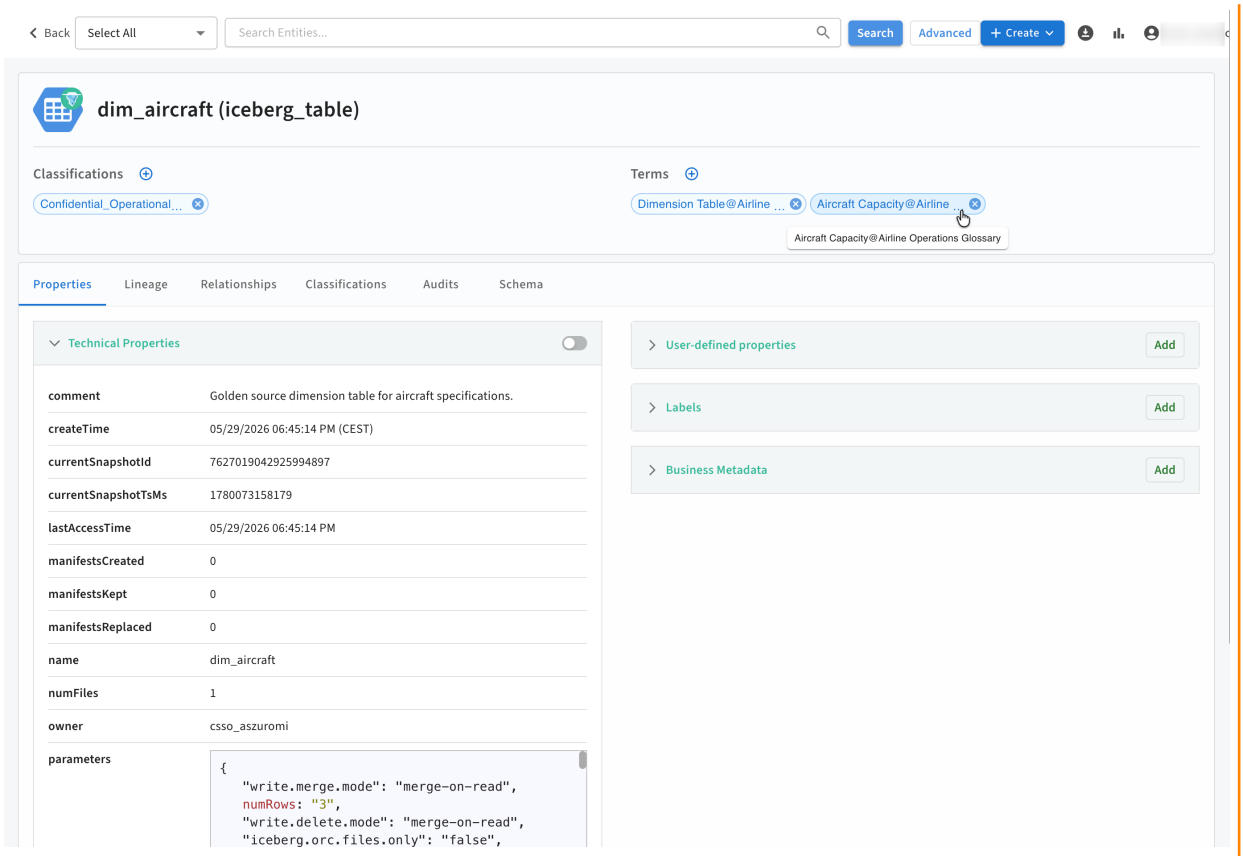
**Figure 12: Parent glossary on an entity in Classic UI**




The entity page for the term is as shown in the following image:

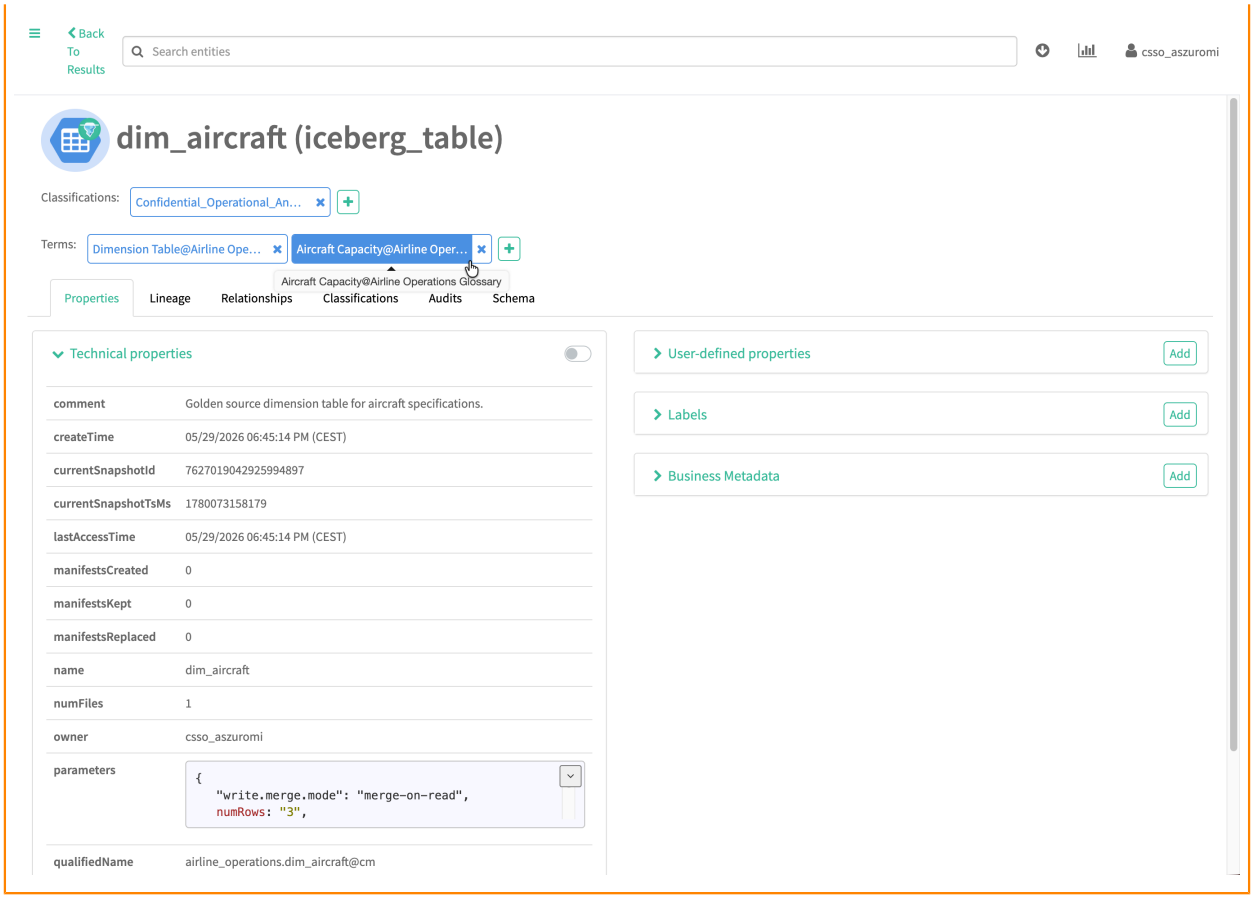
**For New User Interface**

**Figure 13: Term entity page in New UI**




**For Classic User Interface**

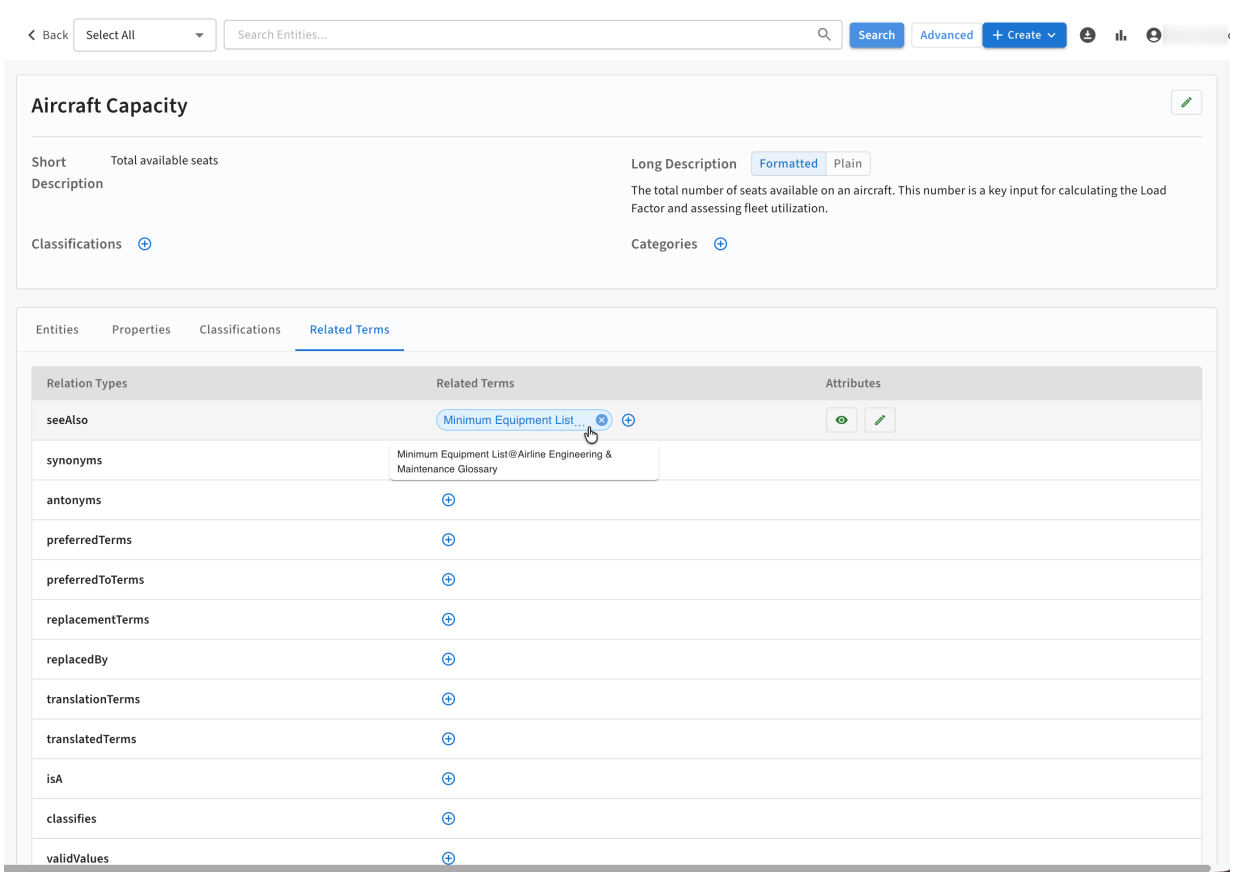
**Figure 14: Term entity page in Classic UI**




**Note:** On the Term details page, you can assign terms to “Relation Types” on the **Related Terms** tab. The assigned term can be related to other terms. When you hover over the term, the assigned term is displayed in the termname@glossaryname format. In this example: **Minimum Equipment List@Airline Engineering & Maintenance Glossary**.

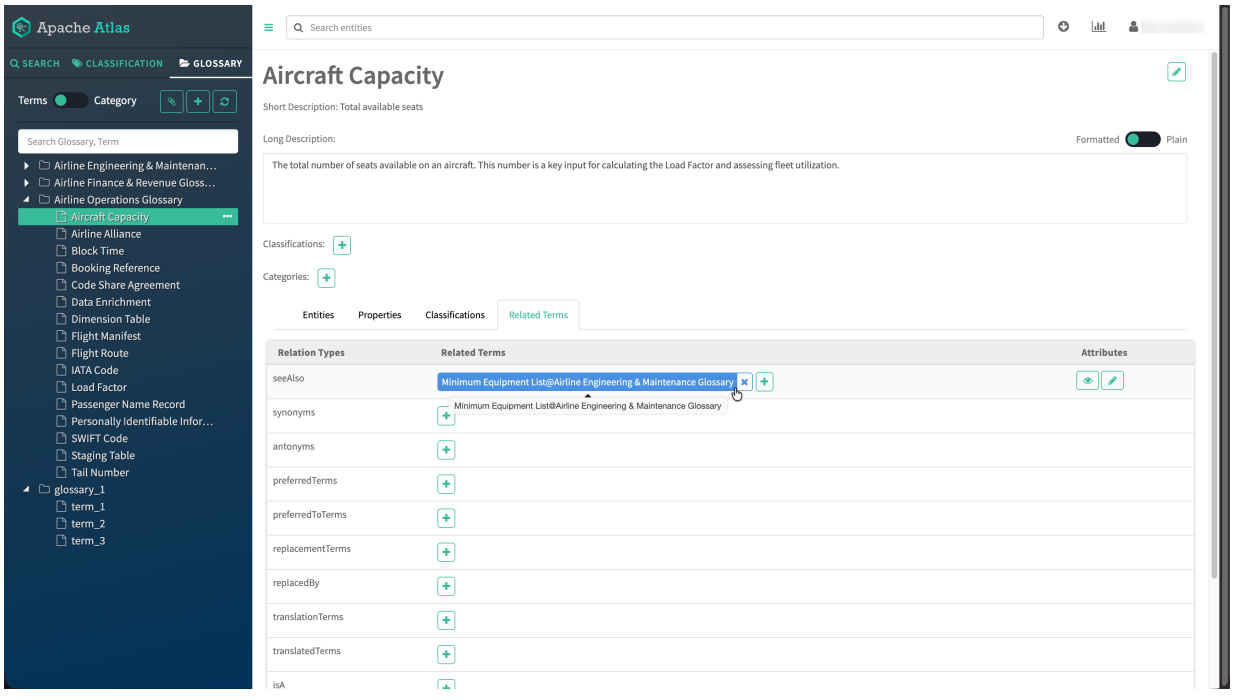
**For New User Interface**

**Figure 15: Related terms on the Term details page in New UI**




**For Classic User Interface**

**Figure 16: Related terms on the Term details page in Classic UI**

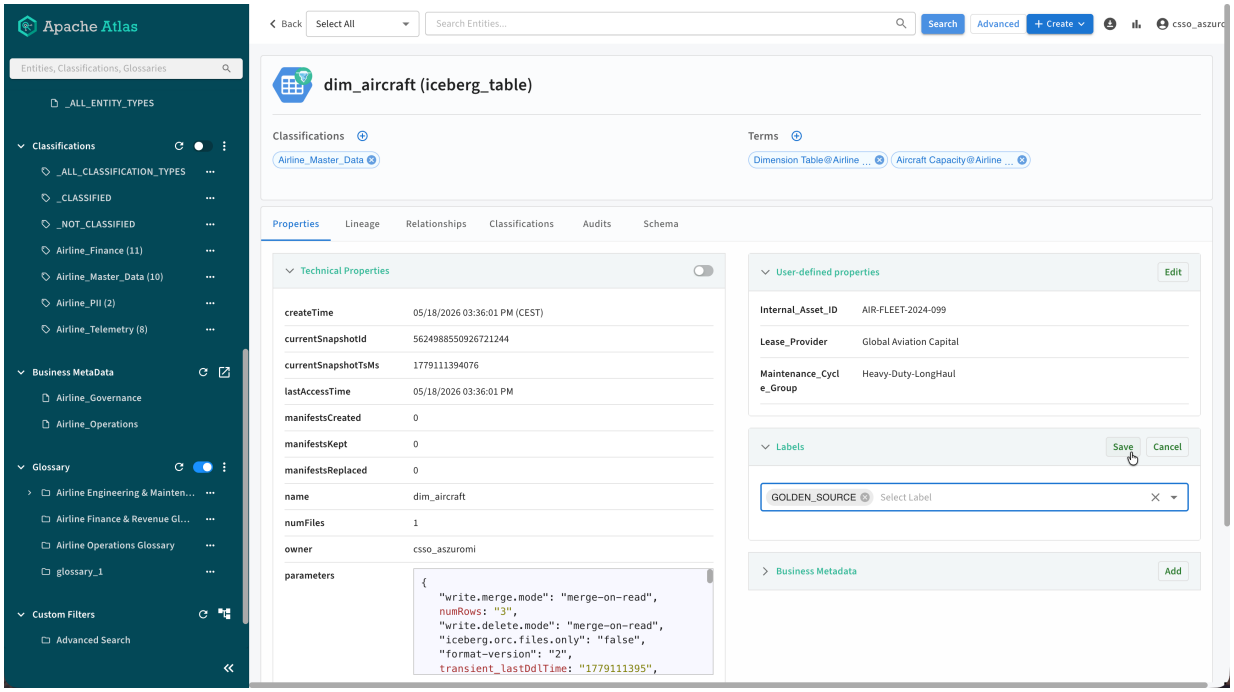


# Creating labels

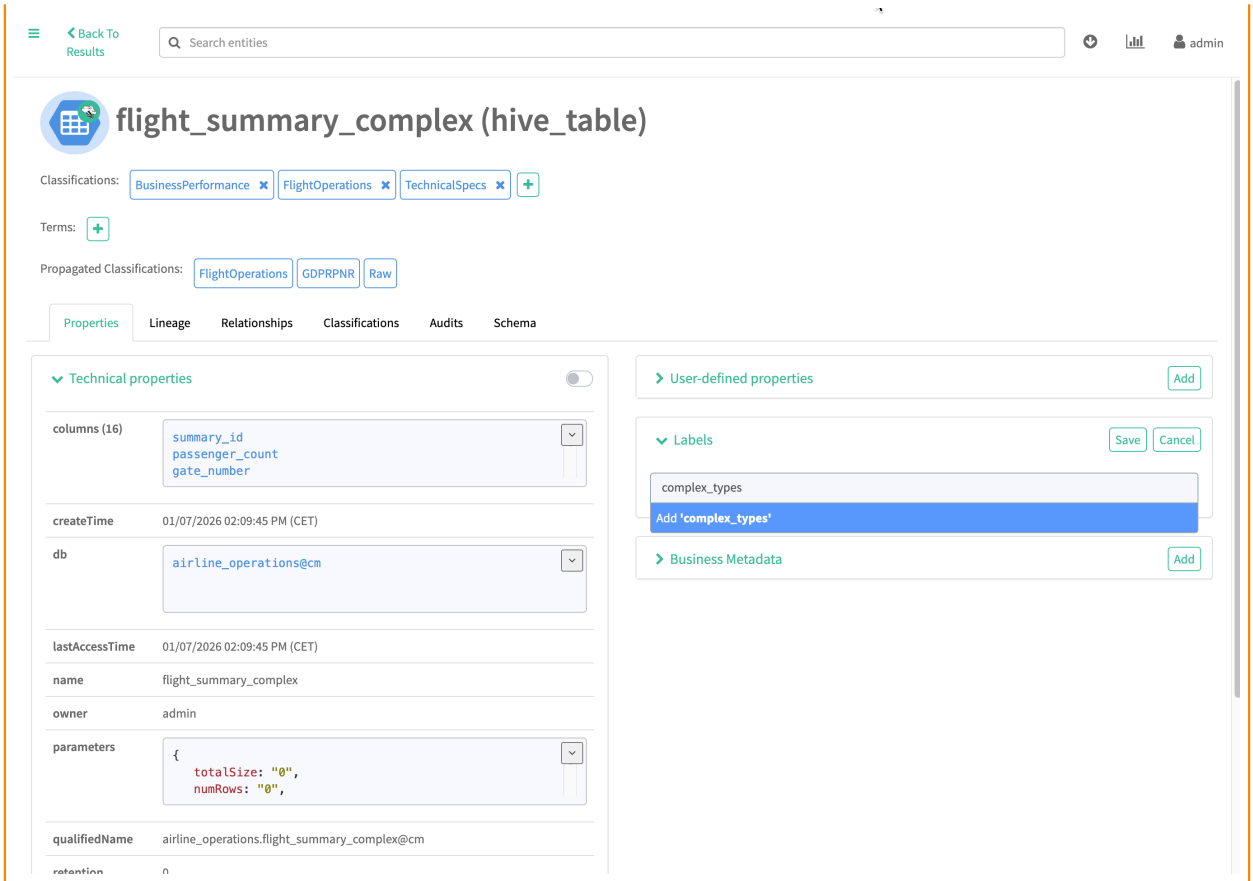
Create and assign a label from the detail page for an entity.

From the detail page for an entity, the **Properties** tab includes a section for labels:

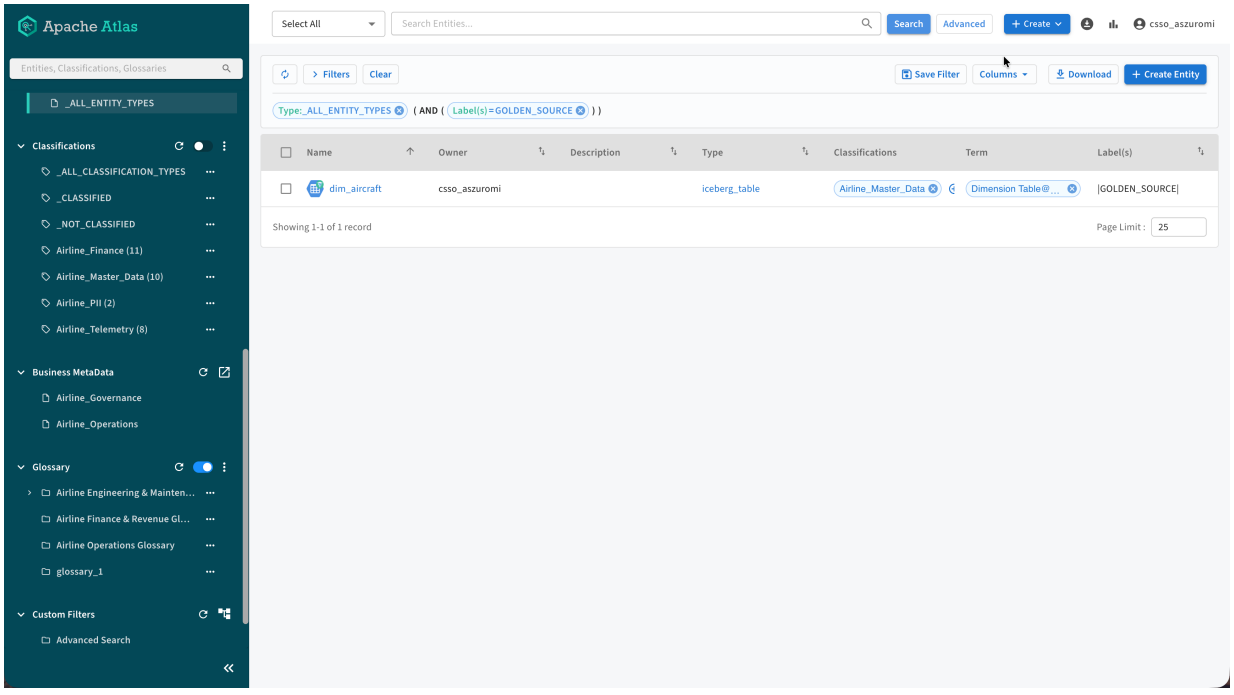
**For New user interface**



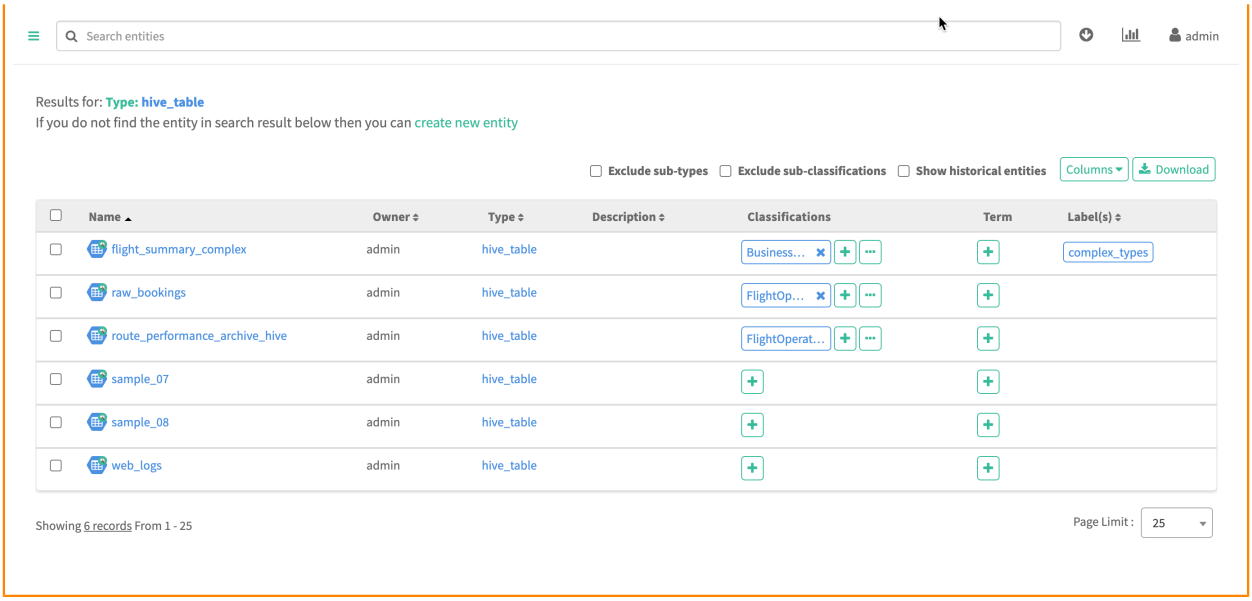

**For Classic user interface**




## For New user interface




## For Classic user interface




Labels can be 50 characters and contain ASCII characters, hyphens (-) and underscores (_). You can search for entities using the text from labels assigned to the entities.

**Related Information**

Using Free-text Search

# Adding attributes to classifications

Attributes are key-value pairs defined for a classification that you can set to a value when you assign the classification to an entity

For a new classification, you can add attributes as part of the classification definition.

**For New user interface**

**Figure 17: Creating a new classification**

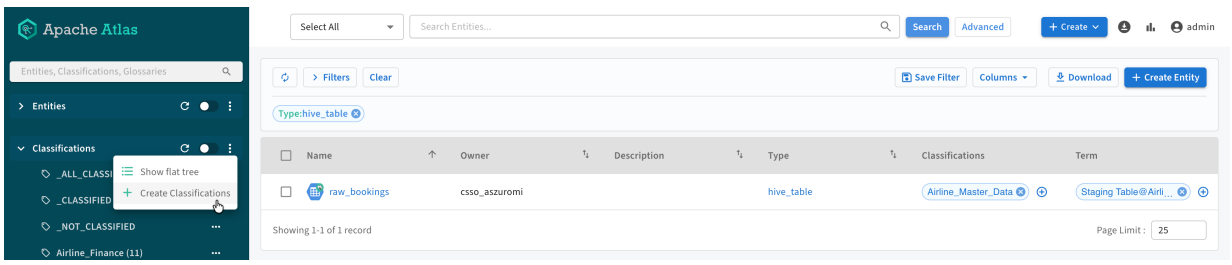
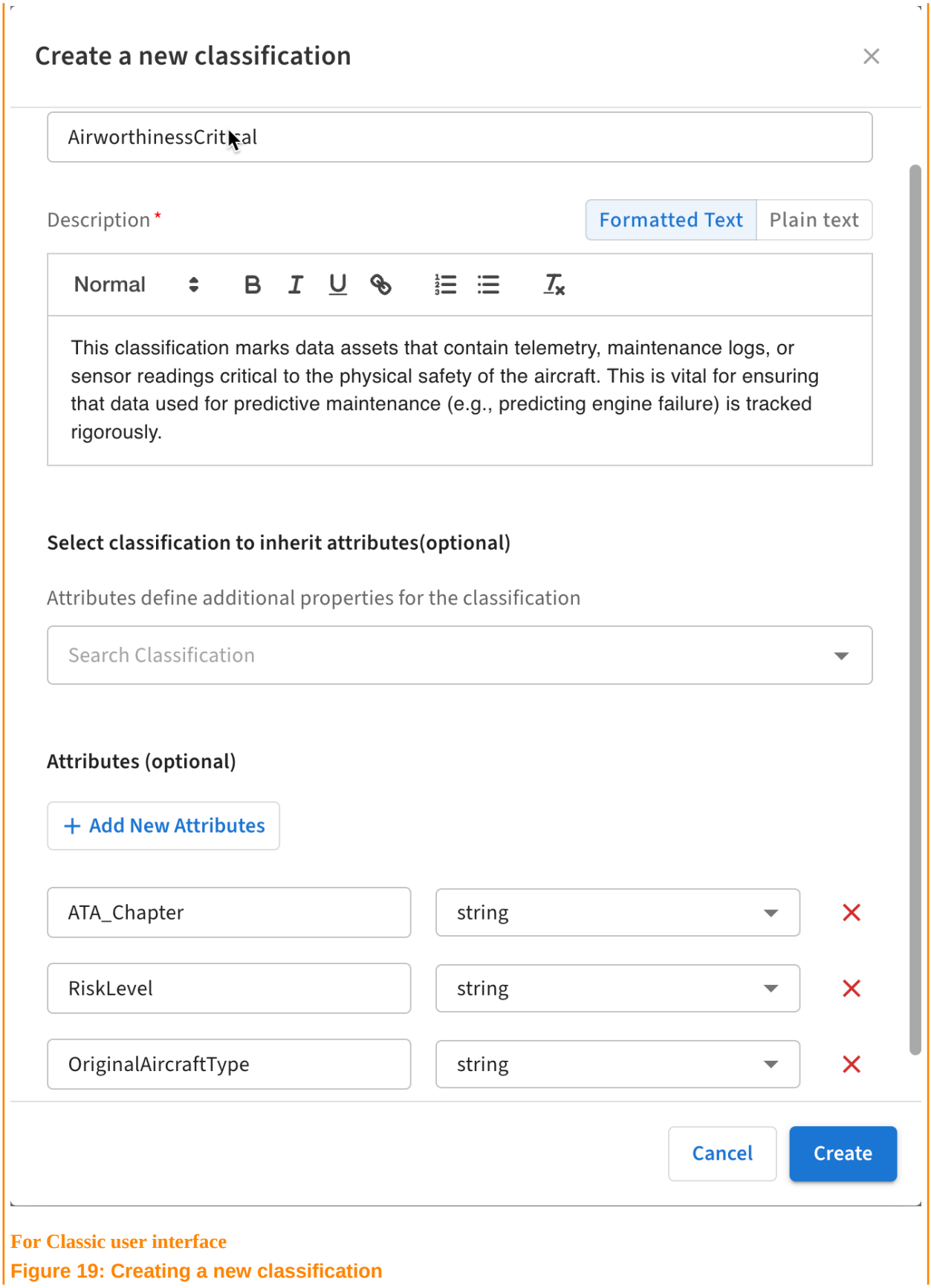



**Figure 18: Editing new classification details**




**For Classic user interface**

**Figure 19: Creating a new classification**

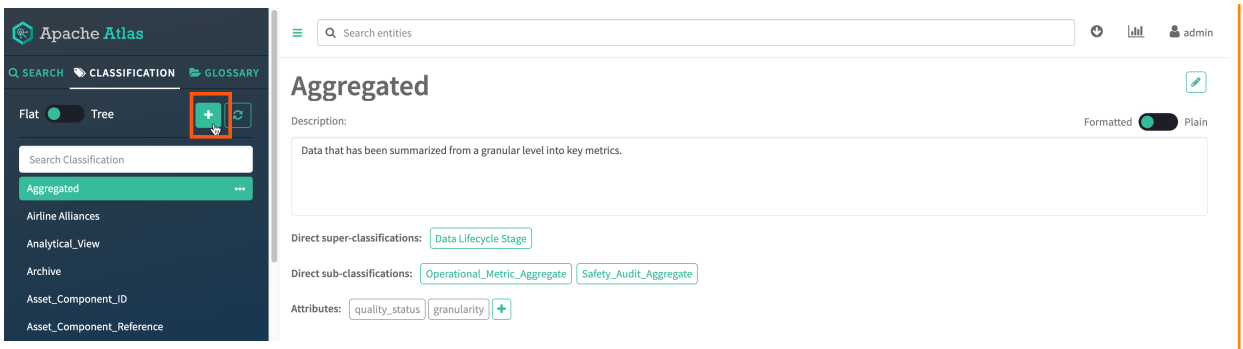
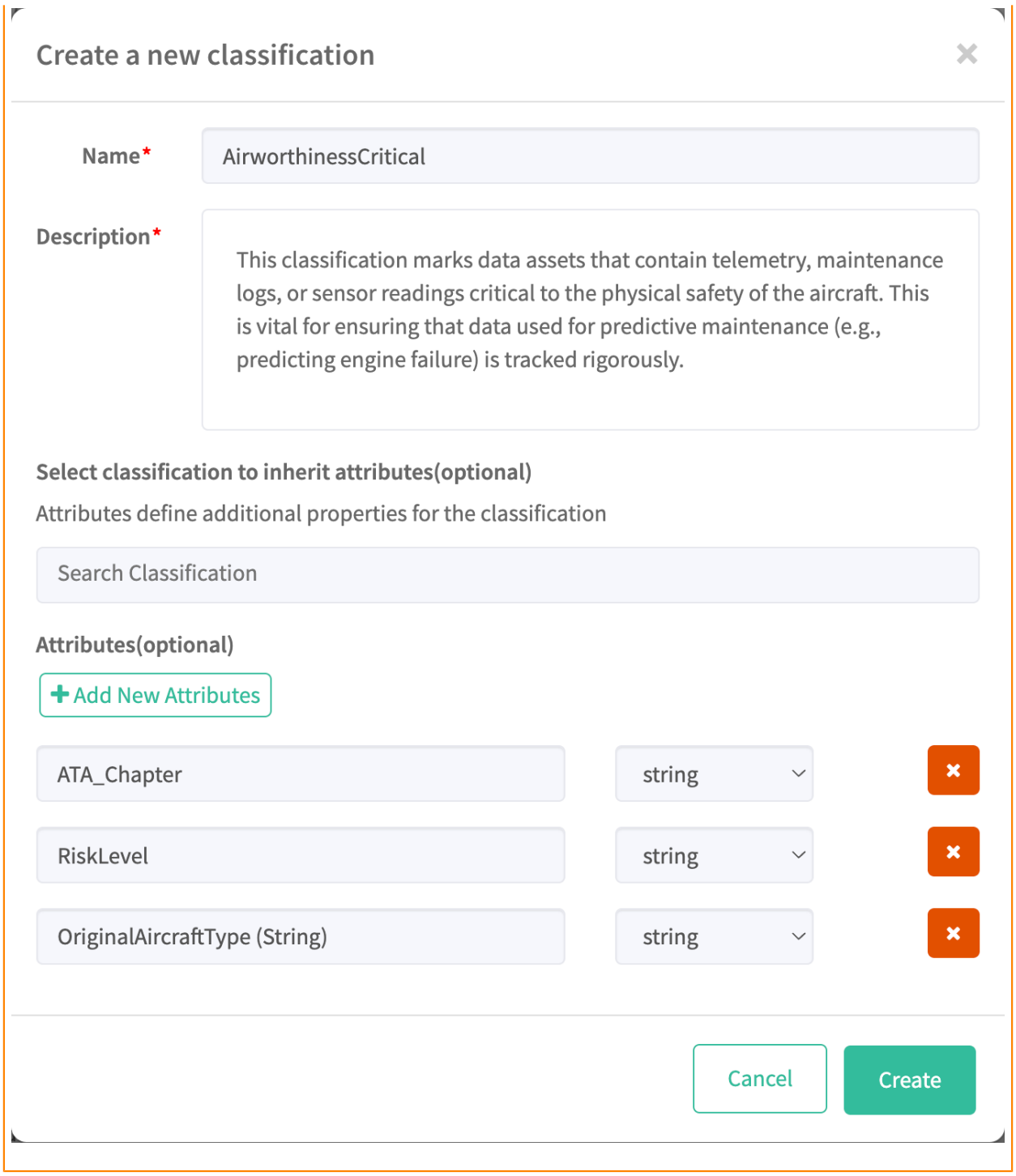
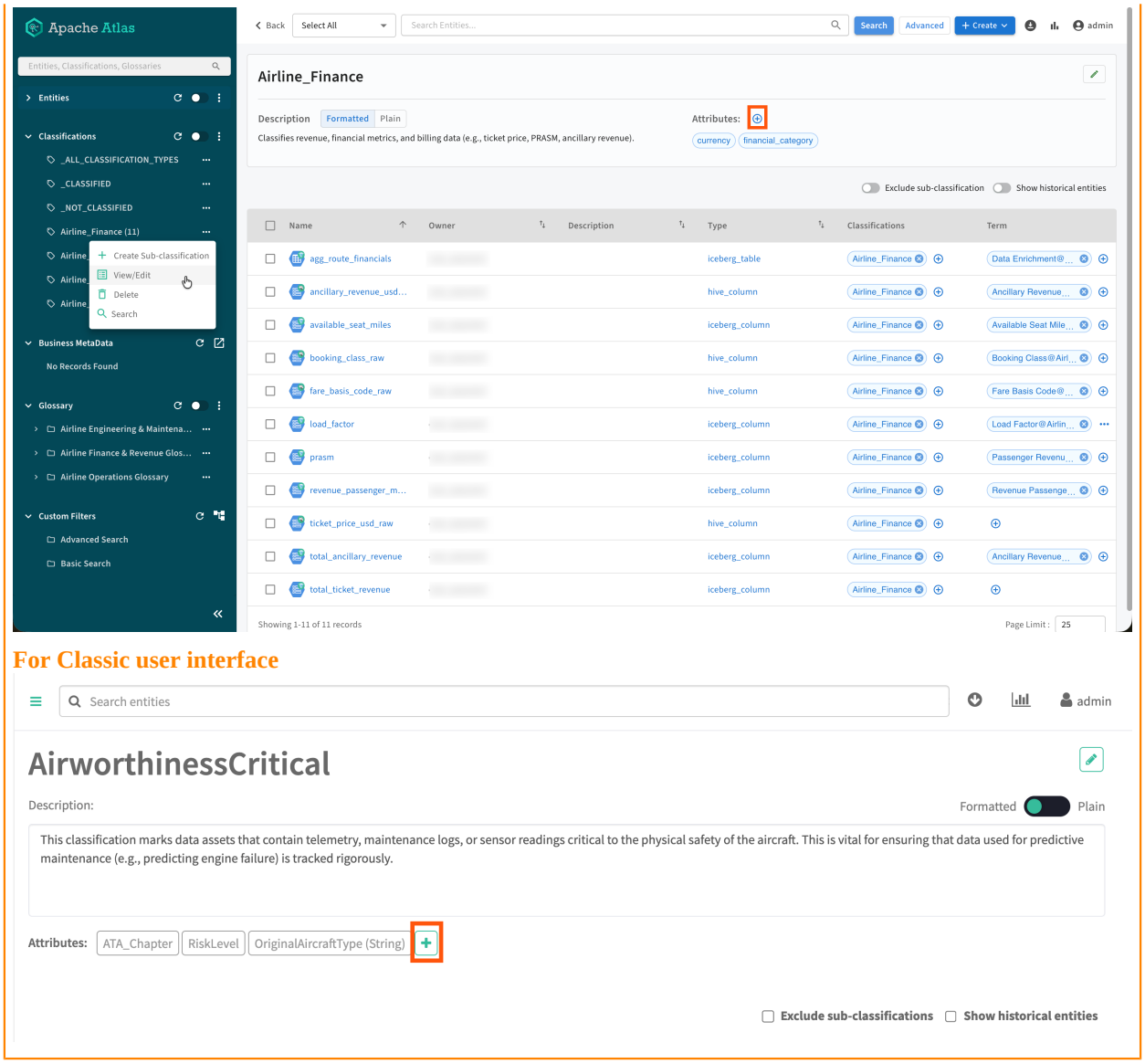



**Figure 20: Editing new classification details**




You can also add attributes to an existing classification. Select the classification in the list, then click the plus button next to Attributes.

**For New user interface**




**For Classic user interface**




# Support for validating the AttributeName in parent and child TypeDef

The Apache Atlas service validates the attribute names of the entity types for those attributes having identical names as their parents' attributes.

Previously, until the Cloudera Runtime 7.1.6 release, Apache Atlas service did not validate the attributes of entity types which led to unpredictable situations, such as being unable to update attribute values or to assign valid values to those attributes in child types.

The checks or the validation of the attributes are performed for multiple use cases pertaining to

Entity and Classification type attribute names. Some of the common scenarios include:

1. Creating Entity or Classification type having attribute name which is same as one of the attributes from its Parent type
2. Updating the existing type to make it as a child of some other type, Atlas validates for the attribute names in both the types.

3. Updating the existing child type by adding an attribute , enables Atlas to validate if that attribute name is already present in its parent-type attributes.



**Attention:** These validations are also applicable for the Classification types.

Use case 1: If the user attempts to create an Entity or Classification type having an attribute name same as one of the attributes from its parent type, the Atlas service does not allow to create a child type and throws an exception.

As an example:

Consider there is a Type "ParentType" which has attributes "attributeA", "attributeB", and "attributeC". The user wants to create a child type of this "ParentType", say "ChildType". Note that the child type should not have any of the above attributes that are indicated. If any of these attributes are included at the time of "ChildType" creation, the Atlas service does not allow the creation of "ChildType".

Use case 2: If the user attempts to update the existing type and tries to change this type as a child to another type, Atlas service verifies the attribute names in both the types. If Atlas reports that the parent and child type have the same name attributes, Atlas does not allow updating the type and raises an exception.

As an example:

Consider there are 2 types "MyType01" having attribute "attributeA" and "MyType02" also having "attributeA". Atlas does not allow updating "MyType02" to become the child type of "MyType01" (and vice versa).

Use case 3: If a user attempts to update the existing child type and tries to add any attribute in child type, the Atlas service checks if that attribute name is already present in its parent-type attributes. If the attribute is present, Atlas service does not allow adding the attribute in child type and raises an exception.

As an example:

Suppose there are 2 types: "ParentType" having attribute "attributeA" and "ChildType" which is a child of "ParentType" and having attribute "attributeB". If a user tries to update the "ChildType" by adding an attribute "attributeA" in it, Atlas service does not allow adding the attribute in the "ChildType".

## Validations for parent types

In Atlas, validations for scenarios where multiple parent types are involved for both entity types as well as Classifications.



**Note:** These validations are also applicable for the Classification types.

Use case 1: When there are two types having same name attributes, these two types cannot be assigned as parent-types to a child type. If a user tries to create such a child type, Atlas service does not allow it to create child type and raises an exception.

As an example:

Suppose two types "MyType01" and "MyType02" have a common attribute "attributeA".

A user tries to create a "ChildType" type by assigning both types "MyType01" and "MyType02" as its parents. Atlas service does not allow creation of "ChildType" because both parent types have the same name attribute.

Use case 2: A child type cannot be updated as a child of two parent types which have the same name attribute. If a user tries to update such a child type, Atlas service does not allow that and raises an exception.

As an example:

Suppose a type "ParentType01" has attribute "attributeA" and its child type is "ChildType". Also, another independent type "MyType02" which has the attribute "attributeA". The user wants to update the "ChildType" and tries to make it a child of "MyType02". Atlas service does not allow updating "ChildType", because both parent types have the same name attribute.

## Case for implementing backward compatibility

When users of older versions want to upgrade their Apache Atlas versions to the latest one, they might face an issue because of certain validation checks in Atlas.

Existing types with attributes violating the attribute name rules (which were added in later Atlas versions) may have been added to the system.

All the existing types get populated at the time of Atlas startup and they all get validated.

If the users have Entity types or Classifications in the system that violate the naming rule, then Atlas raises an exception at the time of the service startup if the users have upgraded their environment to the latest version.

As a result of this exception that results at the time of Atlas startup, the typedef registry does not get populated. Even though users can log in to Atlas UI, they cannot view or use any types or Entities.

When users having data with such types try to upgrade their environment to the latest bits, they encounter issues as discussed earlier in this section.

Also, in their application.log they see an exception with a system output:

Error code: "ATLAS-400-00-09E" and Error message: "Invalid attribute name: <type name>.<attribute name>. Attribute already exists in another parent type: <parent type name>"

The backward compatibility feature is built to avoid these scenarios for such Entity types and Classifications.

### How backward compatibility works

The backward compatibility feature is provided to skip exceptions coming from the attribute name rule.

From your Cloudera Manager instance > Configuration tab, a property must be added in your CM Safety Valve configuration.

atlas.skip.check.for.parent.child.attribute.name=true

Later, restart the Atlas service to apply this configuration.

When Atlas starts, no exceptions are raised and all the typedefs and Entities are displayed and available for use.

What Next:

After adding the backward compatibility configuration, all the validations and checks are disabled. You can create / update the types which have the same name attributes as their parent type attributes. The Atlas service operates in the same way as it was behaving prior to the Cloudera Runtime 7.1.7 version.



**Note:** When this feature is disabled, there will be corresponding Warning logs generated against those entity types, which may contain the information like this example.

Error code: "ATLAS-400-00-09E" and Error message: "Invalid attribute name: <type name>.<attribute name>. Attribute already exists in another parent type: <parent type name>"

If the user does not want any of their migrated existing types (which violate the name rule) to be present in the current environment, the user can delete these types using the Atlas REST APIs and later remove the configuration from the Cloudera Manager Safety Valve. Finally, restart the Atlas service.



**Caution:** Before deleting the typedefs, if there are any entities belonging to those types in the system, then the user must first delete and then purge those entities.

# Associating classifications with entities

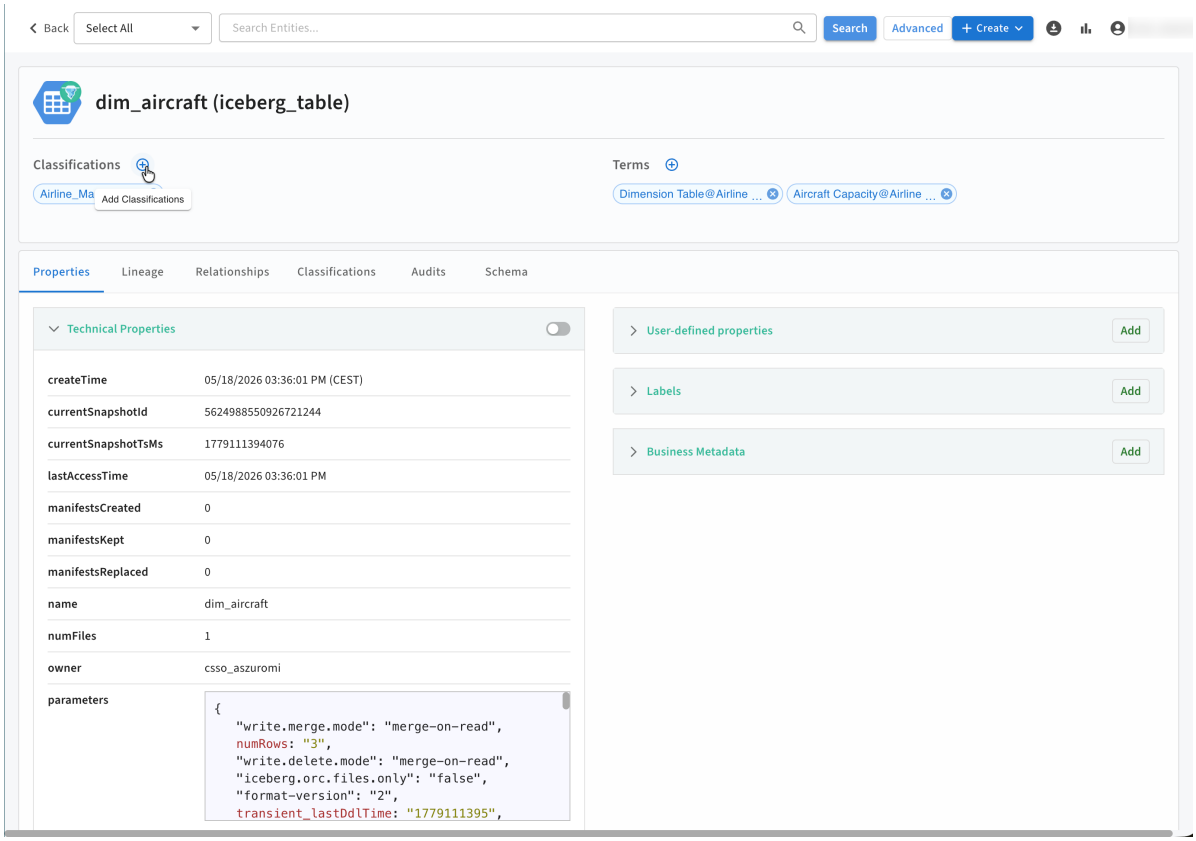
Assign classifications to entities in the entity detail page or in the search results.

There are two ways to associate a classification with an entity:

**For New user interface**

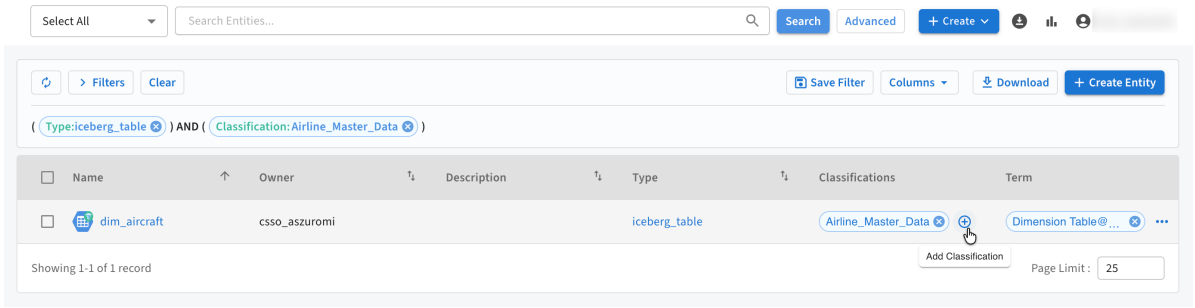
- Add the classification to the entity in the entity detail page.

**Figure 21: Assign classification from entity detail page in New UI**




- Add the classification to the entity in the search results.

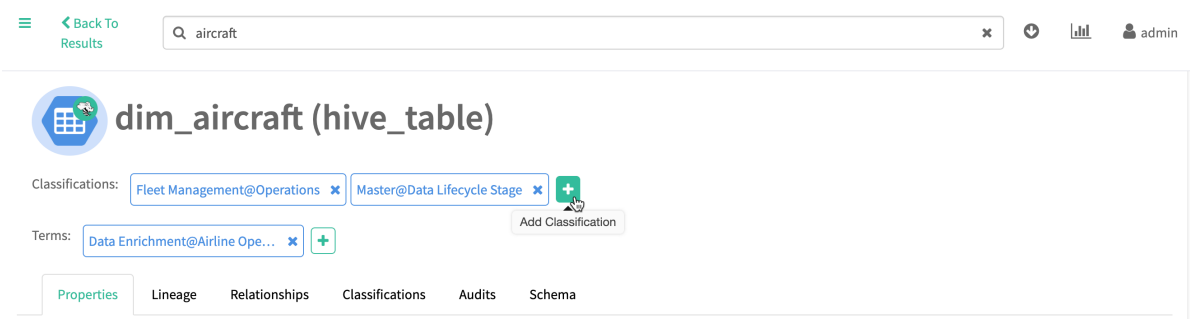
**Figure 22: Assign classification from search results in New UI**




**For Classic user interface**

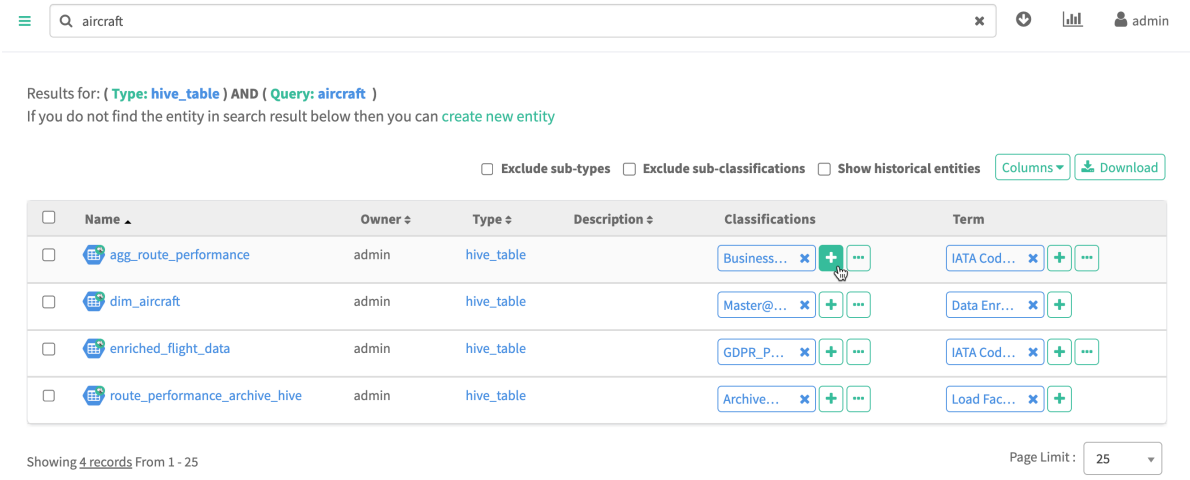
- Add the classification to the entity in the entity detail page.

**Figure 23: Assign classification from entity detail page in Classic UI**




- Add the classification to the entity in the search results.

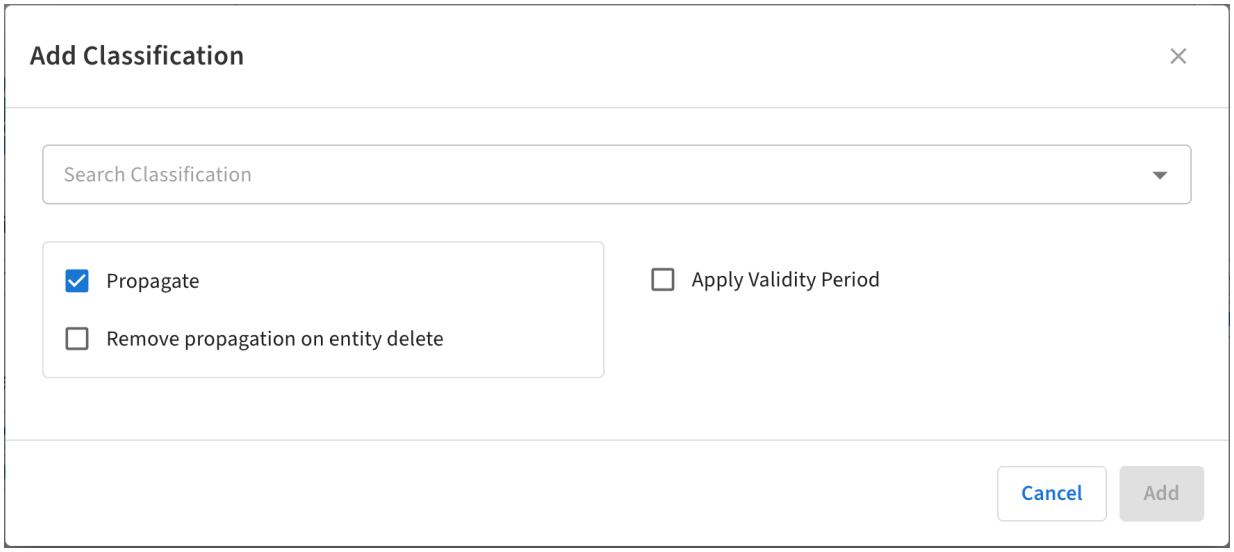
**Figure 24: Assign classification from search results in Classic UI**




When you associate a classification with an entity, you can set the classification's behavior with these controls:

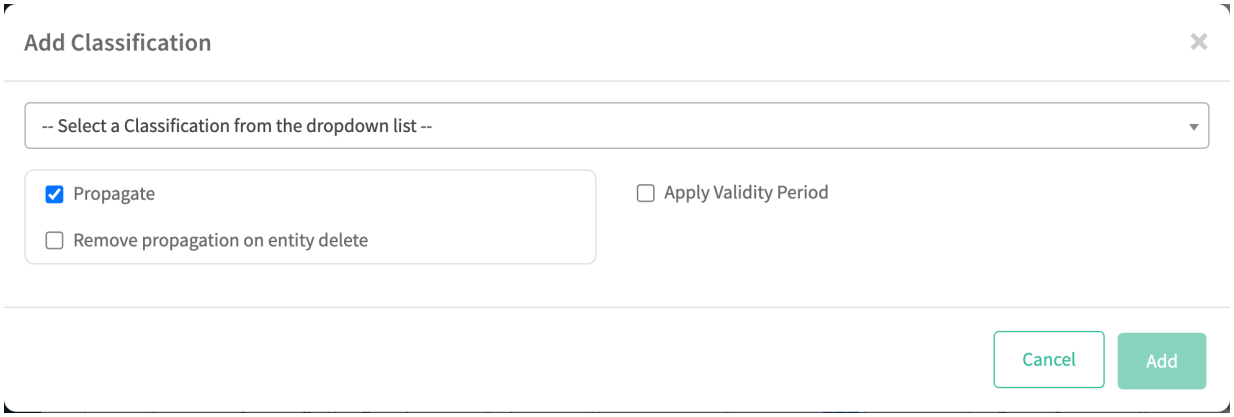
**For New user interface**

**Figure 25: Classification behavior options when associating an entity in New UI**



**For Classic user interface**

**Figure 26: Classification behavior options when associating an entity in Classic UI**




- Propagate: Any entities in the impact chain of this entity will automatically be tagged with this classification. The classification can't be removed from the "downstream" entities without being removed from this source entity. See more at Propagate classifications to derived entities.
- Apply validity period: You can set a time period after which this classification is removed from the entity. Set the start time or end time or both. If you do not choose a time zone, the local time of the Atlas server is used.
- Remove propagation on entity delete: When an entity is deleted in the source and marked as deleted in Atlas, you can choose to maintain the propagation path, or to break propagation at the deleted entity.

You can change the behavior of classifications after they are assigned: go to the **Classifications** tab for an entity and click .

**For New user interface**

**Figure 27: Classifications tab on entity detail in New UI**

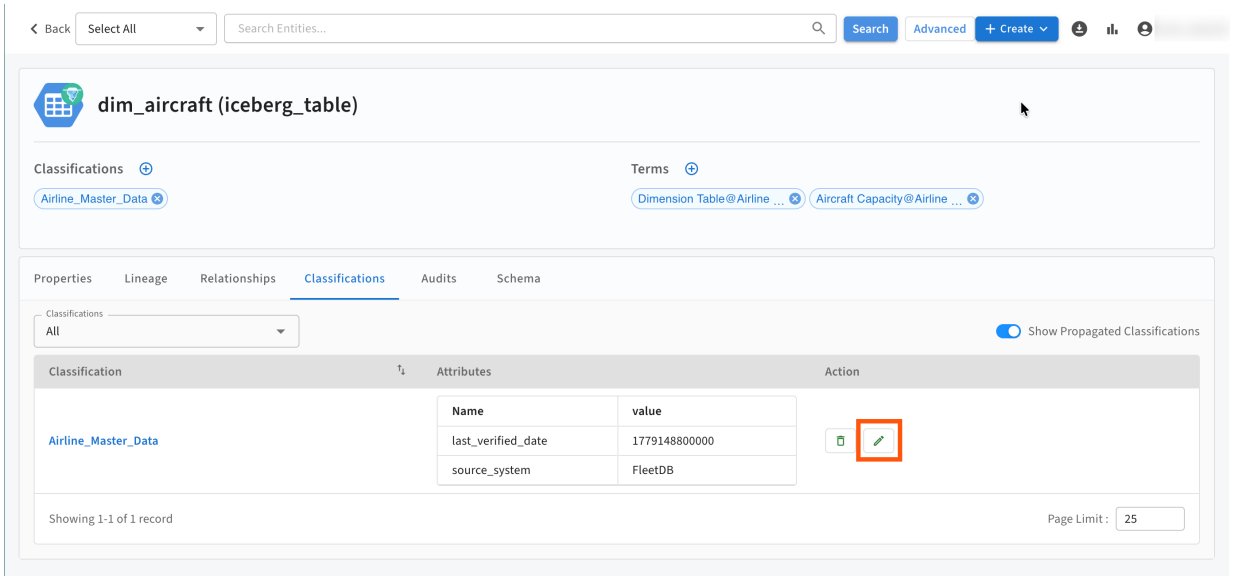
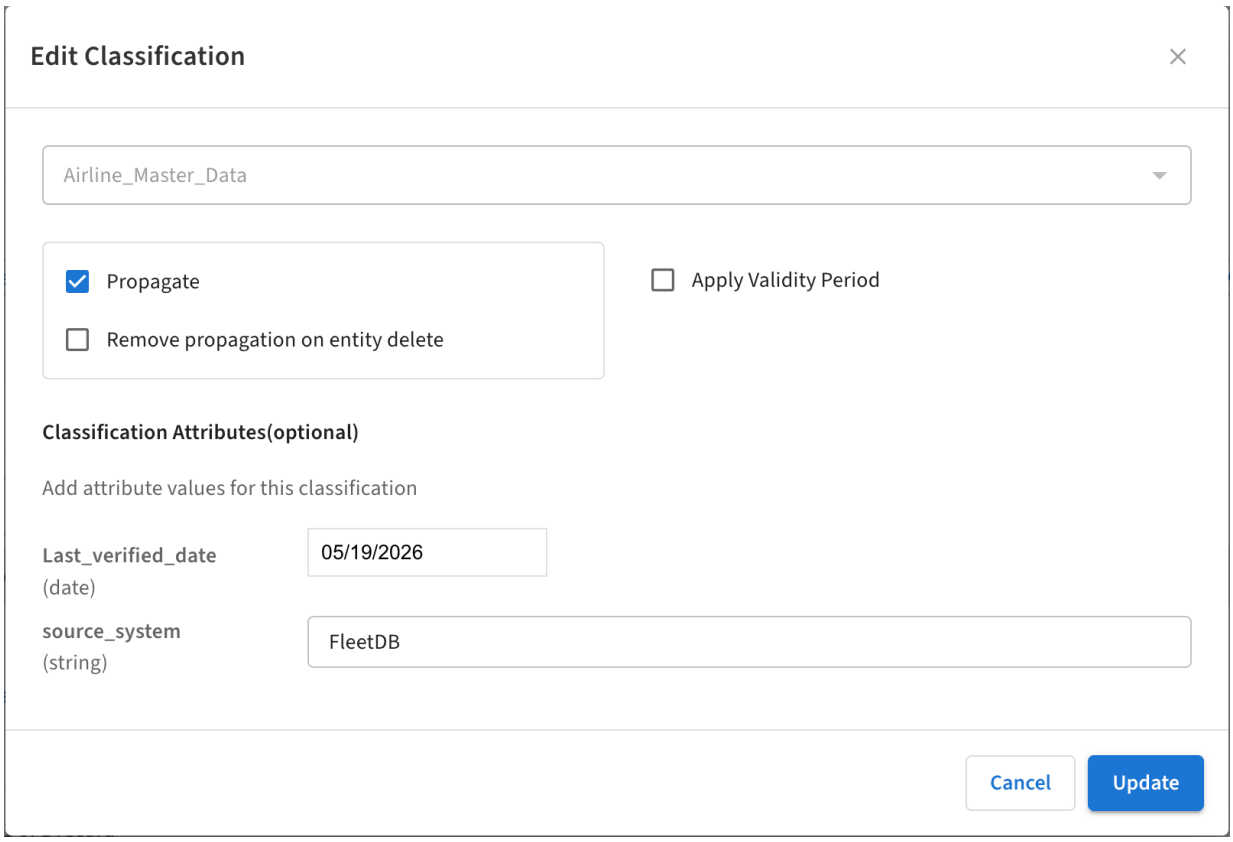



**Figure 28: Update classification propagation in New UI**




**For Classic user interface**

**Figure 29: Classifications tab on entity detail in Classic UI**

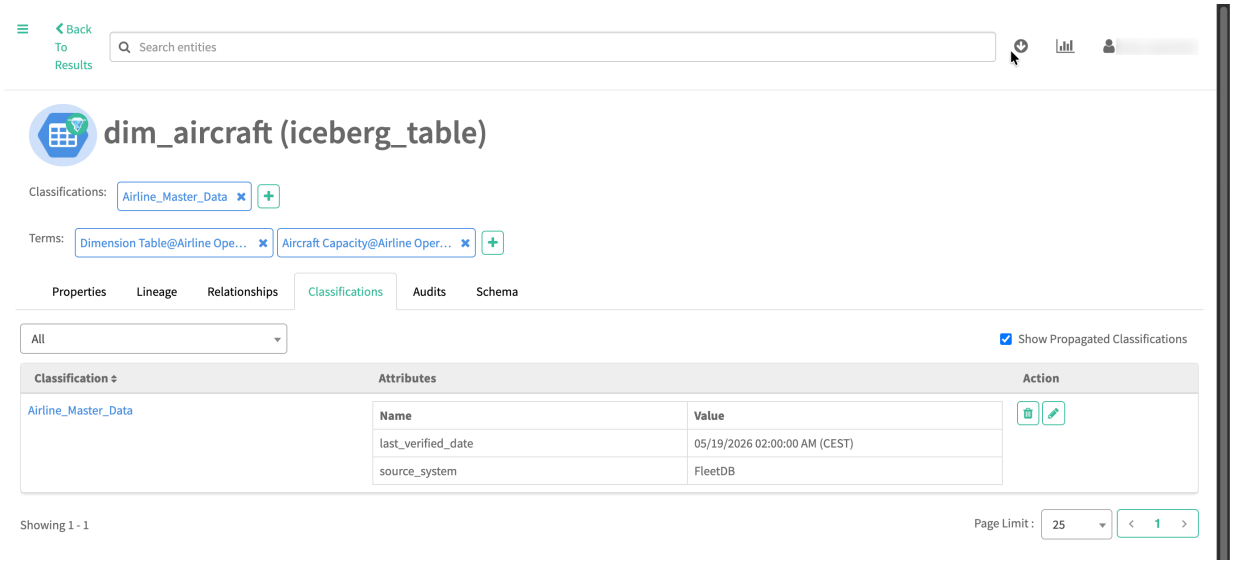
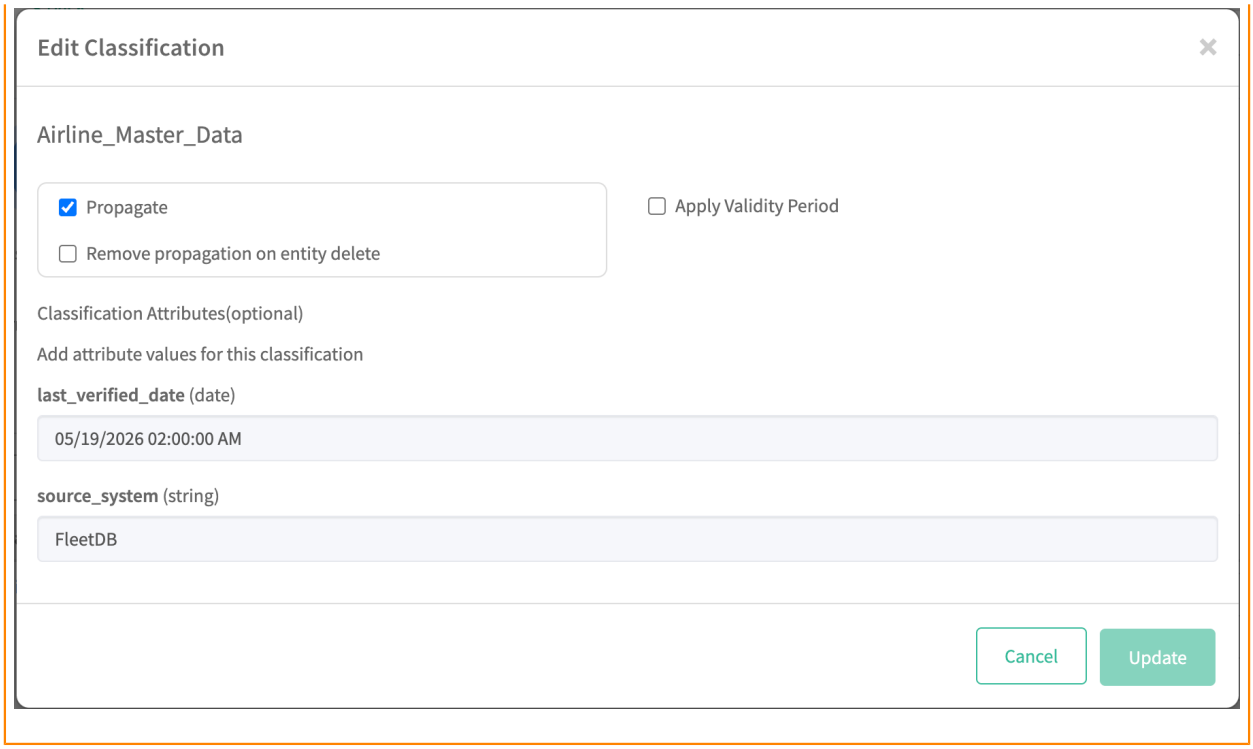



**Figure 30: Update classification propagation in Classic UI**




You can remove classifications from an entity using the ✕ button on the **Search Results** or **Entity Detail** page.

Don't see an ✕ on the classification name? That classification was assigned through propagation; to remove it, you have to turn off propagation for the source entity or term.

### Related Information

Propagating classifications through lineage

# Propagating classifications through lineage

Classifications on table columns can automatically apply to other tables where the same data is found when the data transformations are captured in lineage.

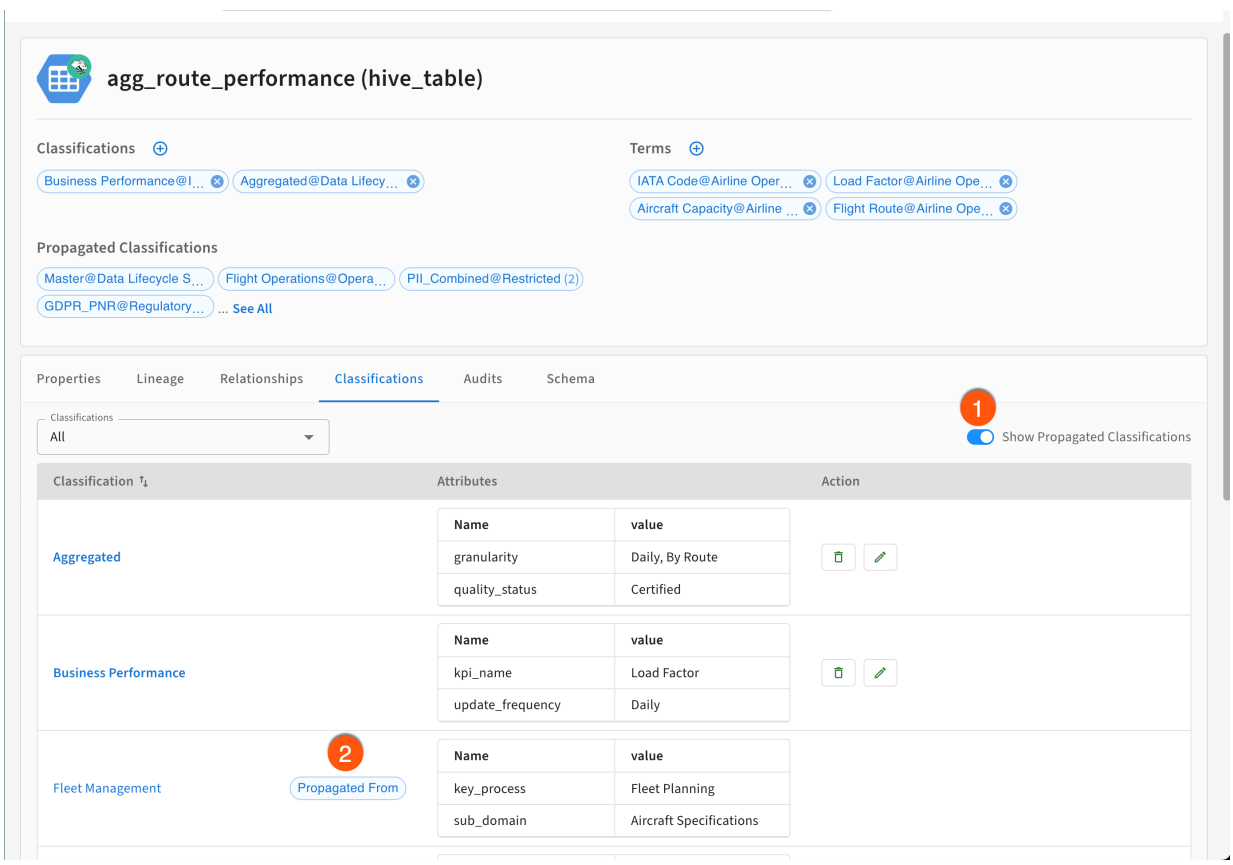
## Viewing propagated classifications

When you look at the classifications assign to an entity, you can see which classifications where originally assigned to this entity and which were propagated here through lineage. From the **Classifications** tab, you can do the following:

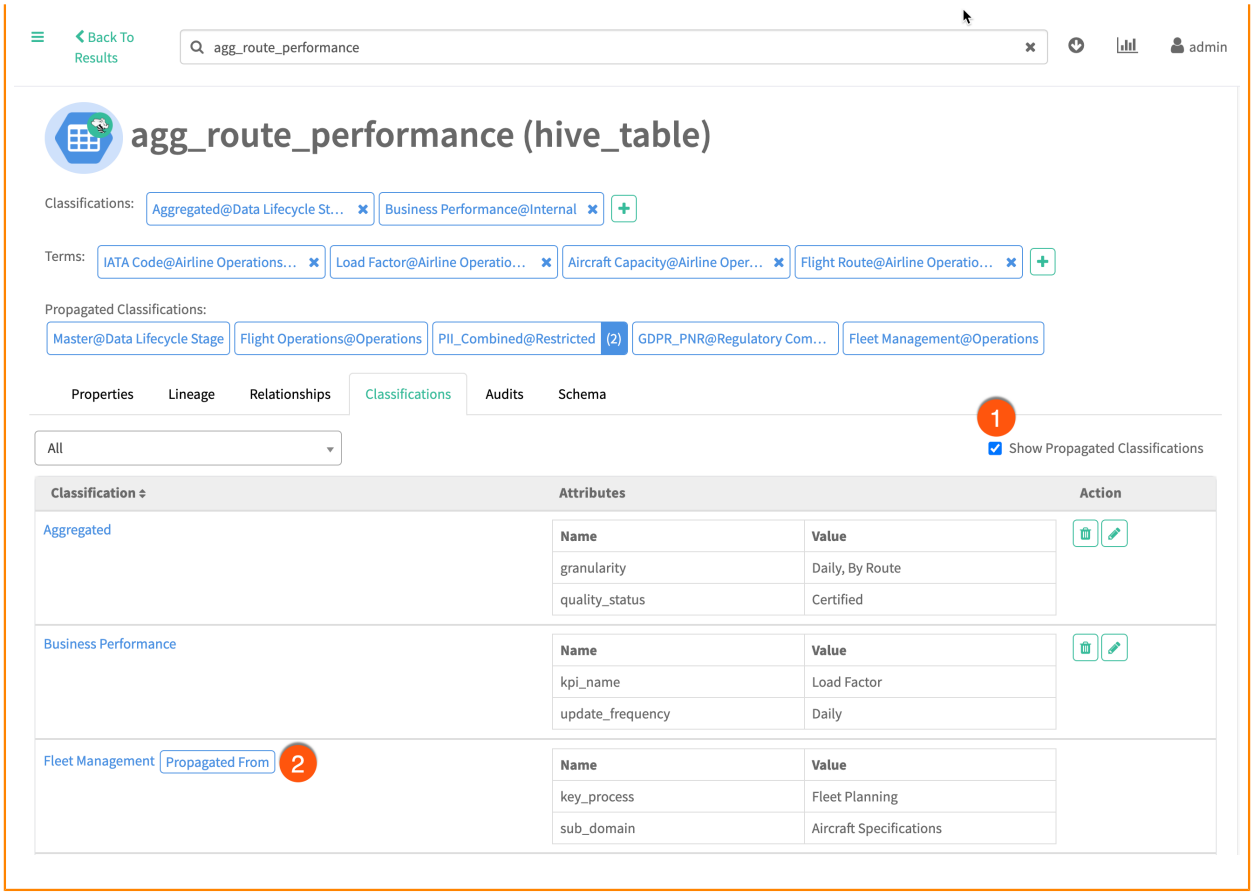
1. Show or hide propagated classifications (Show Propagated Classifications button)
2. Navigate to the original entity where a classification was assigned (Propagated From button)

Navigate to the source of the classification:

**For New user interface**




**For Classic user interface**




## Setting propagation behavior

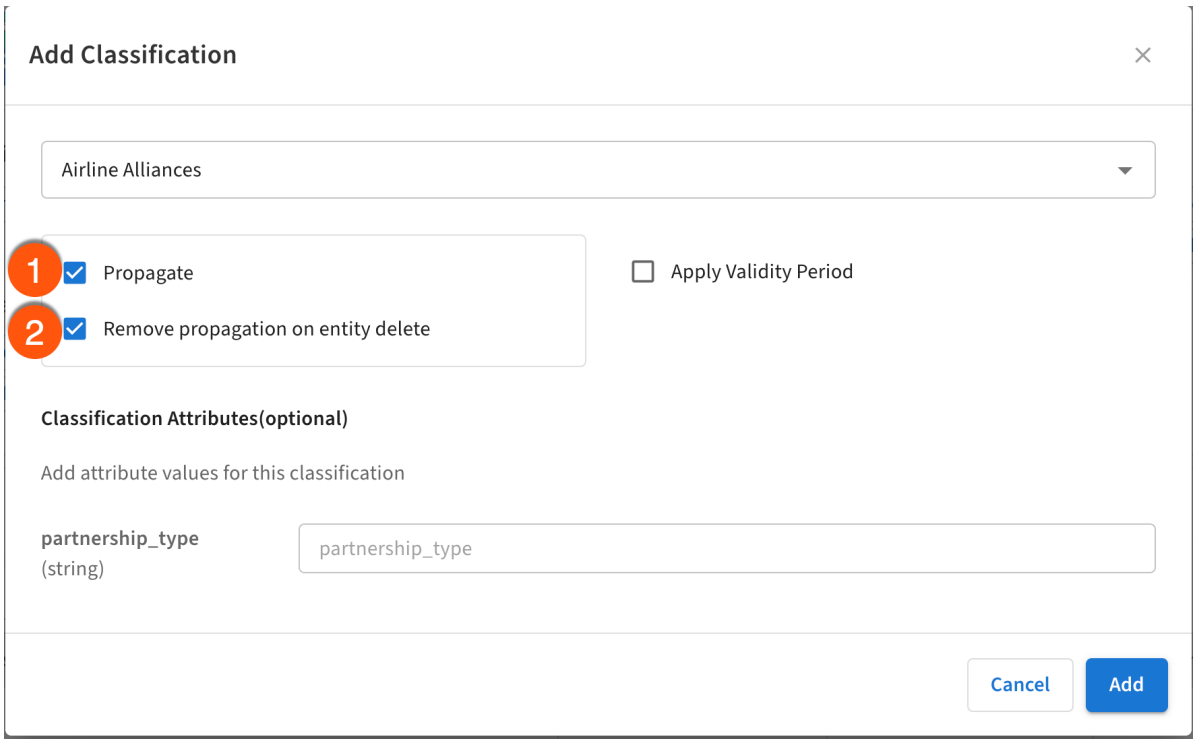
You can set propagation for a classification when you create the classification or in the lineage for an entity where the classification is assigned:

**Note:**

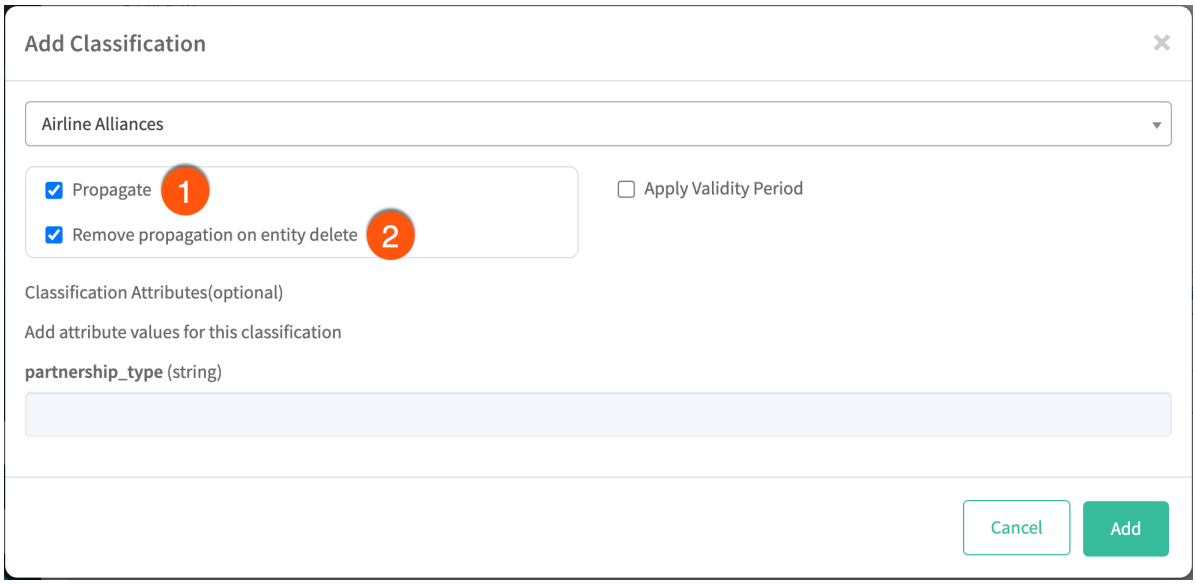
1. The new classification is applied to the entities in the downstream lineage of this entity.
2. When the entity is deleted the classification is removed from the entities where it was propagated to in the downstream lineage.

- Set propagation at the time when the classification is associated with an entity or term.

**For New user interface**

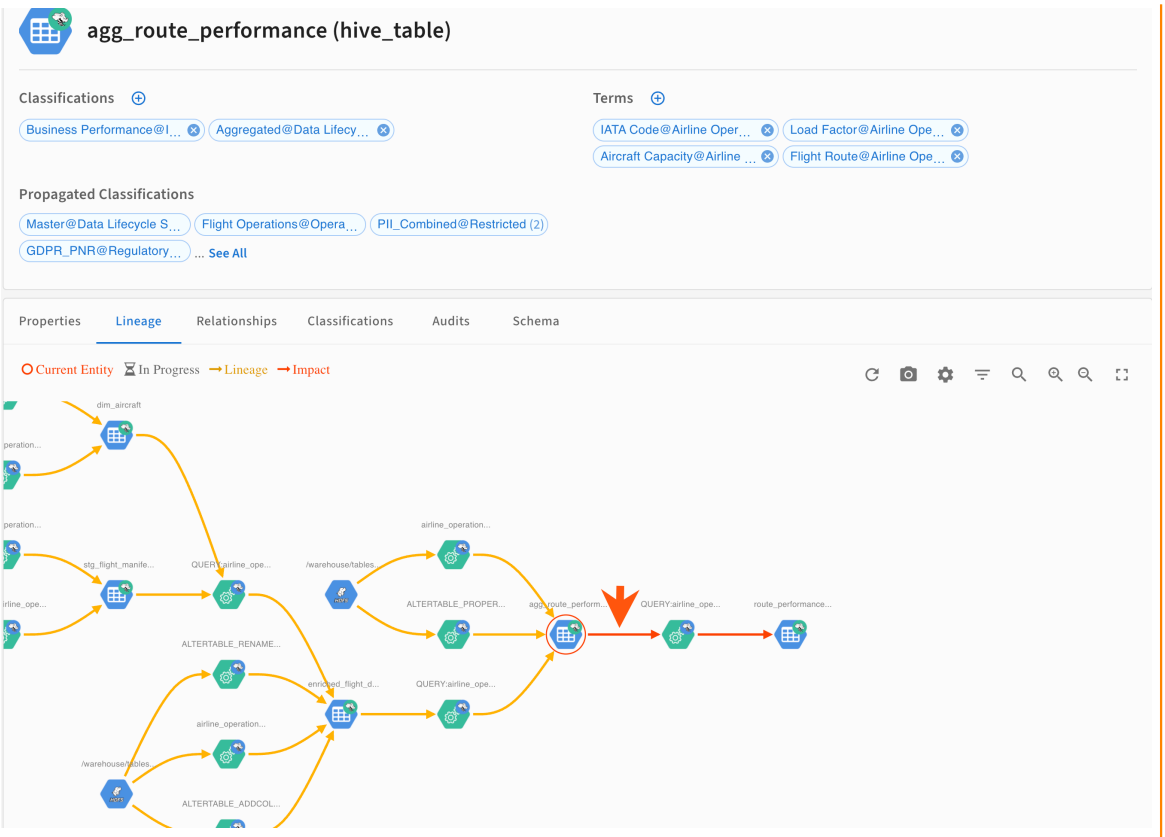



**For Classic user interface**

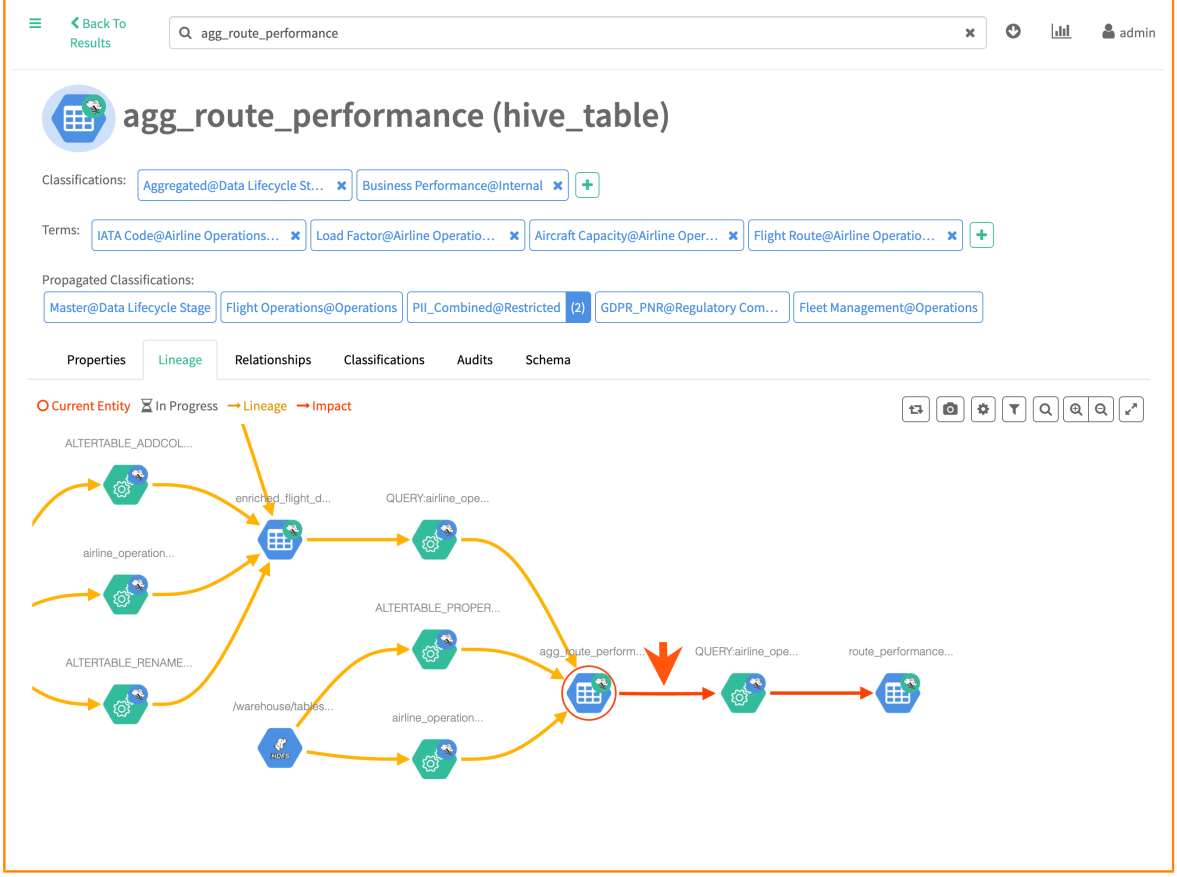



- Set propagation at a specific point in the lineage:
  1. You can control classification propagation by click on lineage segment:

     **For New user interface**

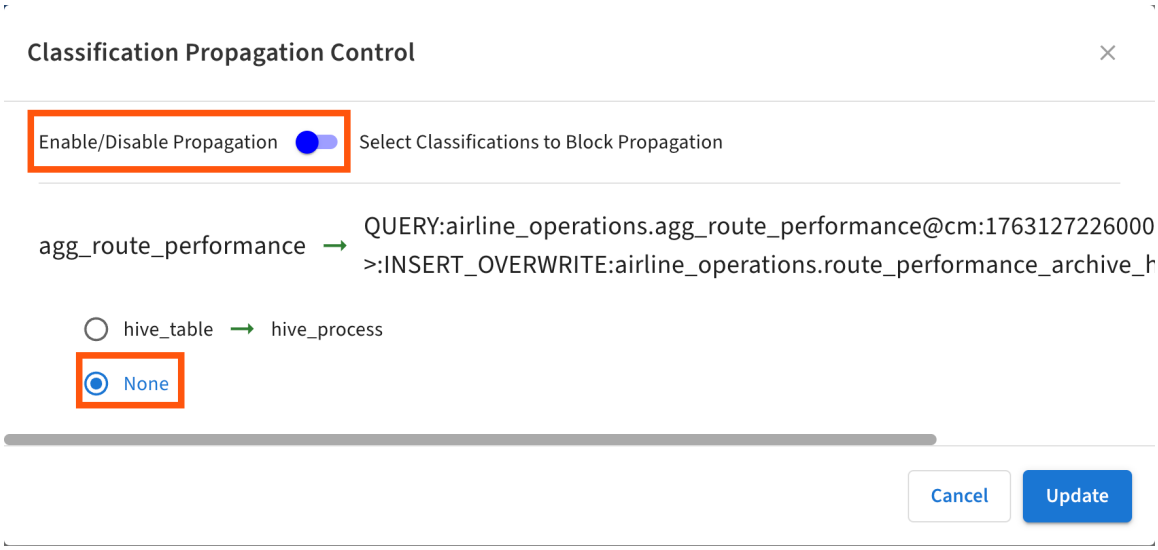



## For Classic user interface

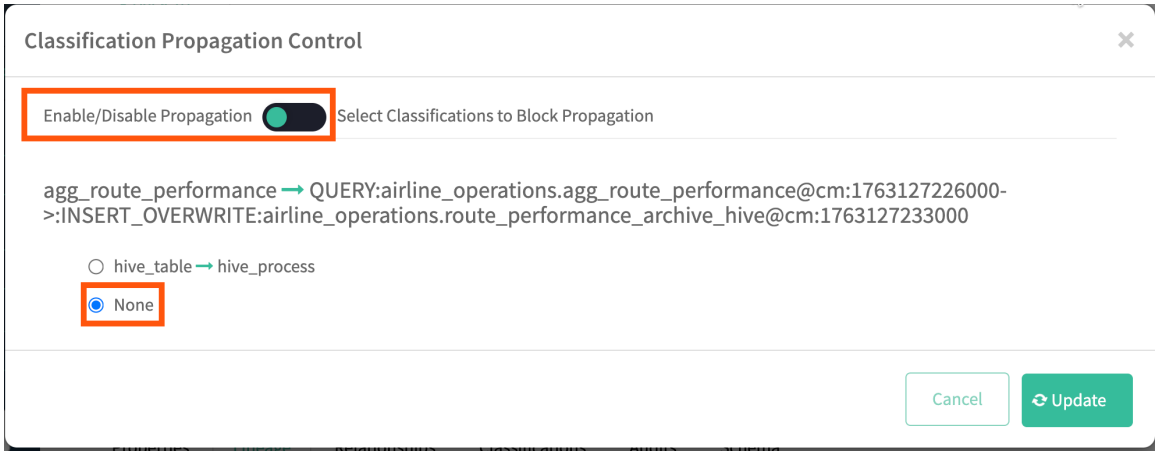


2. You can turn off the propagation at this point in the lineage. Classifications assigned to the entity will not propagate downstream.

**For New user interface**

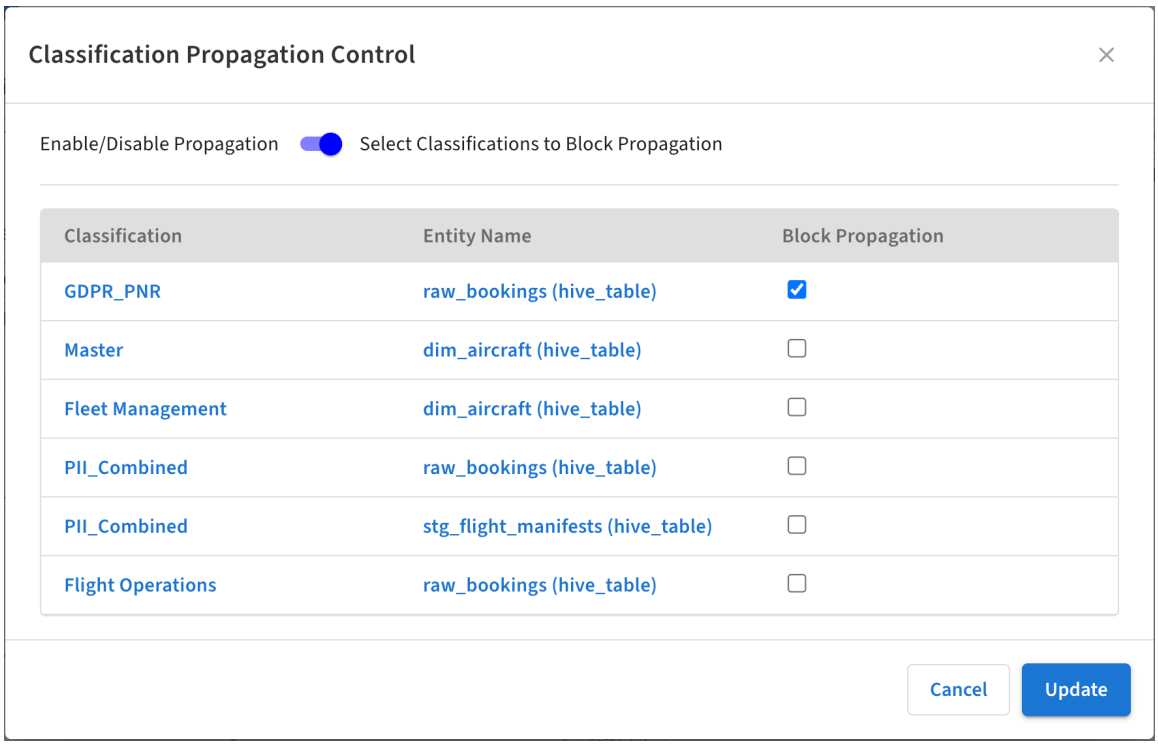



**For Classic user interface**

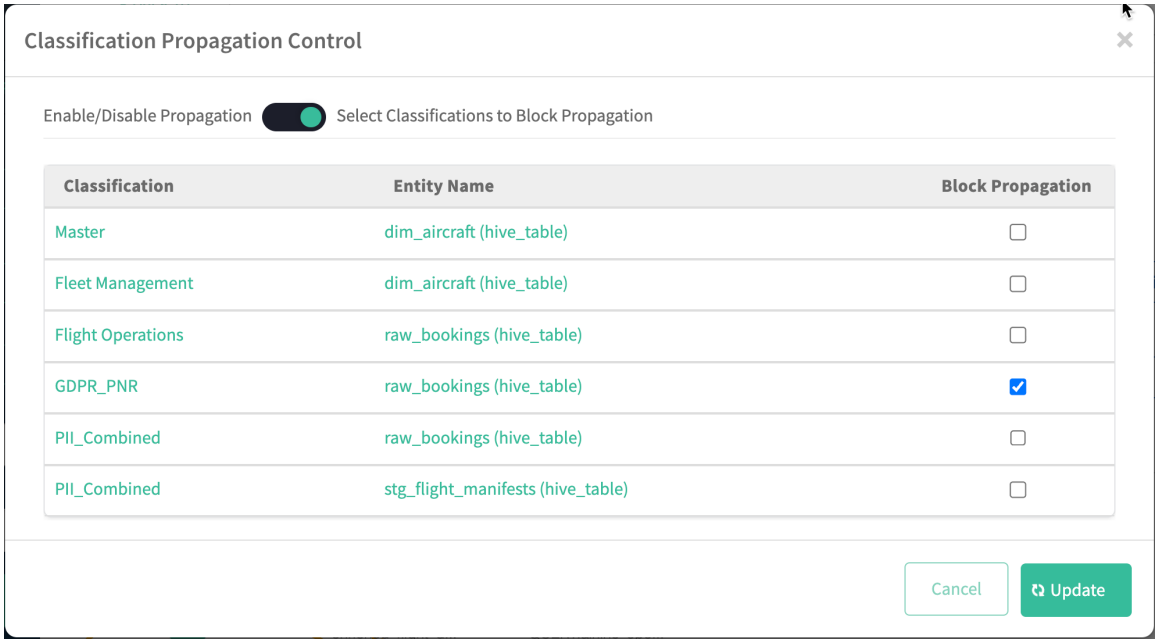



3. You can also block specific classifications' propagation downstream in the lineage:

**For New user interface**




**For Classic user interface**




## Related Information

Associating classifications with entities

Controlling data access using tags

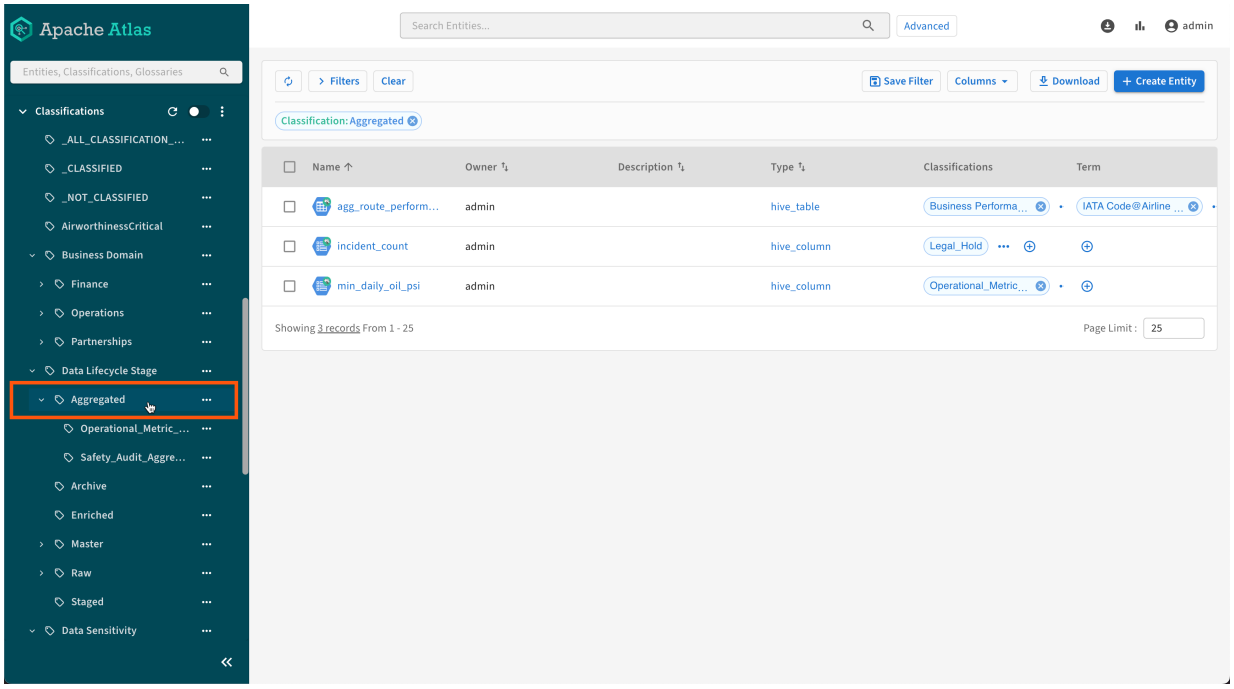
# Searching for entities using classifications

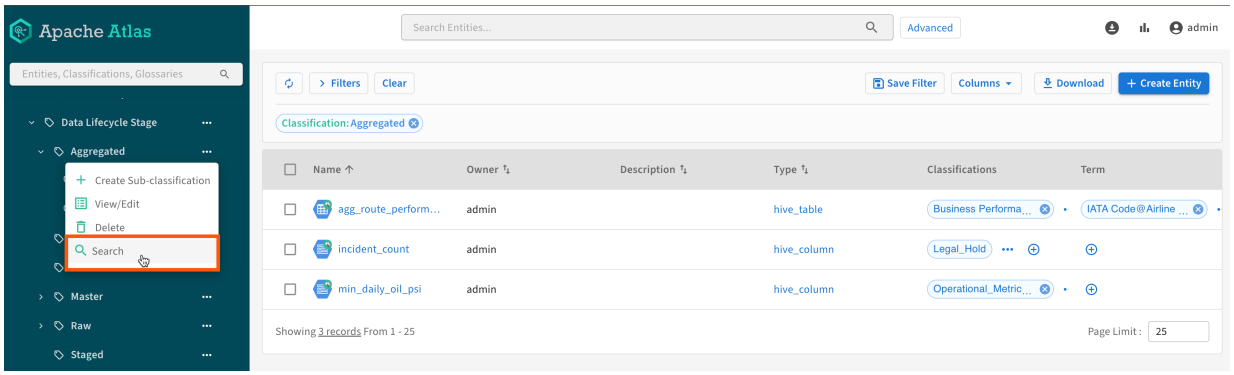
After you tag entities with classifications, it's very easy to search for the entities.

The Atlas dashboard makes it easy to find entities that you've tagged with classifications. In the left navigation pane, go to the **Classification** and select the classification you want. You can refine your search results by adding criteria on the Search tab (**Basic search**).

**For New user interface**

**Figure 31: Classification search results**




**For Classic user interface**

**Figure 32: Classification search results**

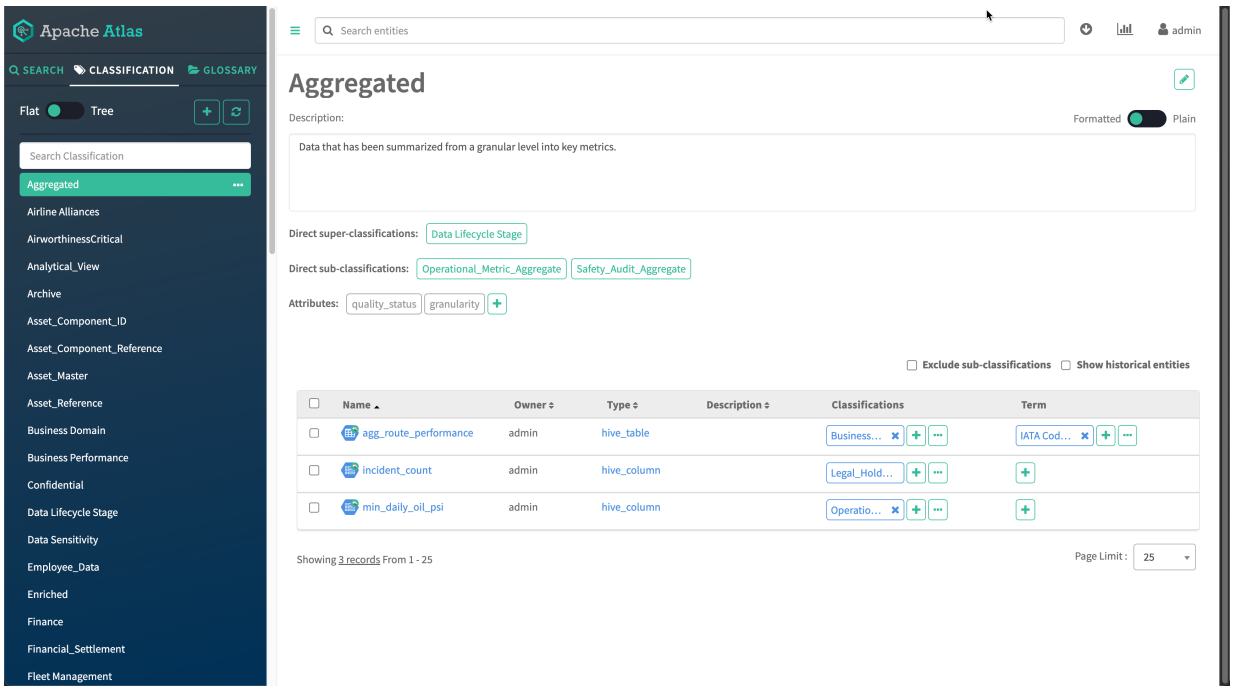



**Figure 33: Starting a filtered classification search**

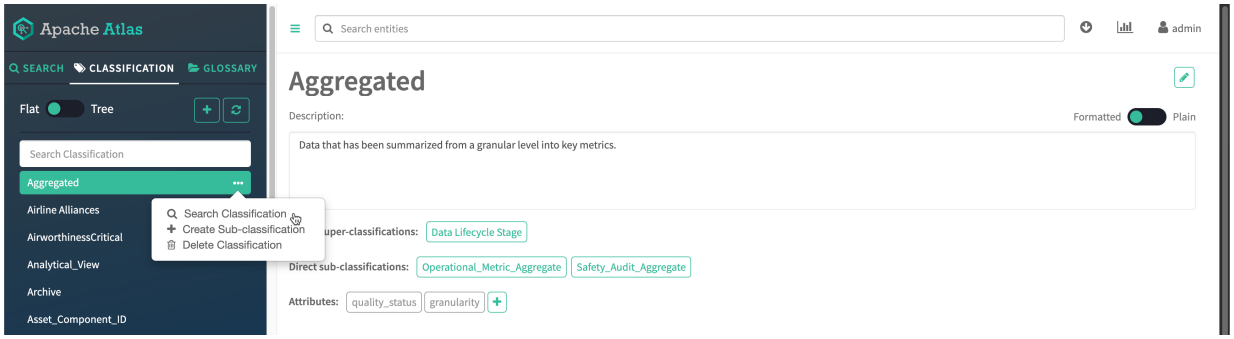
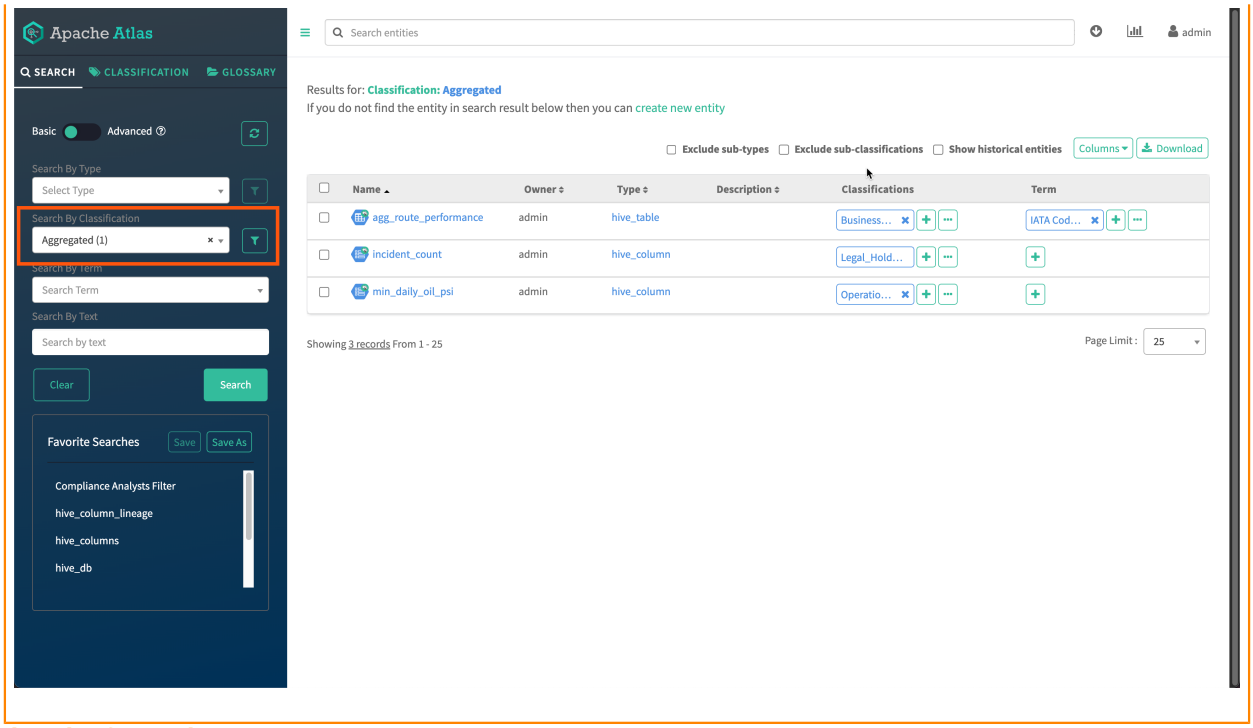



**Figure 34: Classification search with filters**




## Related Information

Using Basic Search