Using annotations to monitor your environment

OnCommand Insight

NetApp
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Using annotations to monitor your environment

When customizing OnCommand Insight to track data for your corporate requirements, you can define specialized notes, called *annotations*, and assign them to your assets. For example, you can annotate assets with information such as asset end of life, data center, building location, storage tier, or volume service level.

Using annotations to help monitor your environment includes the following high-level tasks:

- Creating or edit definitions for all annotation types.
- Displaying asset pages and associating each asset with one or more annotations.

  For example, if an asset is being leased and the lease expires within two months, you might want to apply an end-of-life annotation to the asset. This helps prevent others from using that asset for an extended time.

- Creating rules to automatically apply annotations to multiple assets of the same type.
- Using the annotation import utility to import annotations.
- Filter assets by their annotations.
- Grouping data in reports based on annotations and generate those reports.

  See the *OnCommand Insight Reporting Guide* for more information about reports.

Managing annotation types

OnCommand Insight provides some default annotation types, such as asset life cycle (birthday or end of life), building or data center location, and tier, that you can customize to show in your reports. You can define values for default annotation types or create your own custom annotation types. You can later edit those values.

Default annotation types

OnCommandInsight provides some default annotation types. These annotations can be used to filter or group data and to filter data reporting.

You can associate assets with default annotation types such as the following:

- Asset life cycle, such as birthday, sunset, or end of life
- Location information about a device, such as data center, building, or floor
- Classification of assets, such as by quality (tiers), by connected devices (switch level), or by service level
- Status, such as hot (high utilization)

The following table lists the default annotation types. You can edit any of these annotation names to suit your needs.

Annotation types	Description	Type

Alias	User-friendly name for a resource.	Text
Birthday	Date when the device was or will be brought online.	Date
Building	Physical location of host, storage, switch, and tape resources.	List
City	Municipality location of host, storage, switch, and tape resources.	List
Compute Resource Group	Group assignment used by the Host and VM Filesystems data source.	List
Continent	Geographic location of host, storage, switch, and tape resources.	List
Country	National location of host, storage, switch, and tape resources.	List
Data Center	Physical location of the resource and is available for hosts, storage arrays, switches, and tapes.	List
Direct Attached	Indicates (Yes or No) if a storage resource is connected directly to hosts.	Boolean
End of Life	Date when a device will be taken offline, for example, if the lease expired or the hardware is being retired.	Date
Fabric Alias	User-friendly name for a fabric.	Text
Floor	Location of a device on a floor of a building. Can be set for hosts, storage arrays, switches, and tapes.	List
Hot	Devices already in heavy use on a regular basis or at the threshold of capacity.	Boolean

Note	Comments that you want associated with a resource.	Text
Rack	Rack in which the resource resides.	Text
Room	Room within a building or other location of host, storage, switch, and tape resources.	List
SAN	Logical partition of the network. Available on hosts, storage arrays, tapes, switches, and applications.	List
Service Level	A set of supported service levels that you can assign to resources. Provides an ordered options list for internal volumes, qtree, and volumes. Edit service levels to set performance policies for different levels.	List
State/Province	State or province in which the resource is located.	List
Sunset	Threshold set after which no new allocations can be made to that device. Useful for planned migrations and other pending network changes.	Date
Switch Level	Includes predefined options for setting up categories for switches. Typically, these designations remain for the life of the device, although you can edit them, if needed. Available only for switches.	List
Tier	Can be used to define different levels of service within your environment. Tiers can define the type of level, such as speed needed (for example, gold or silver). This feature is available only on internal volumes, qtrees, storage arrays, storage pools, and volumes.	List

Violation Severity	Rank (for example, major) of a violation (for example, missing host ports or missing redundancy), in a hierarchy of highest to lowest importance.	List

> ⓘ Alias, Data Center, Hot, Service Level, Sunset, Switch Level, Service Level, Tier, and Violation Severity are system-level annotations, which you cannot delete or rename; you can change only their assigned values.

How annotations are assigned

You can assign annotations manually or automatically using annotation rules. OnCommand Insight also automatically assigns some annotations on acquisition of assets and by inheritance. Any annotations that you assign to an asset appear in the User Data section of the asset page.

Annotations are assigned in the following ways:

* You can assign an annotation manually to an asset.

  If an annotation is assigned directly to an asset, the annotation appears as normal text on an asset page. Annotations that are assigned manually always take precedence over annotations that are inherited or assigned by annotation rules.

* You can create an annotation rule to automatically assign annotations to assets of the same type.

  If the annotation is assigned by rule, Insight displays the rule name next to the annotation name on an asset page.

* Insight automatically associates a tier level with a storage tier model to expedite the assignment of storage annotations to your resources on acquisition of assets.

  Certain storage resources are automatically associated with a predefined tier (Tier 1 and Tier 2). For example, the Symmetrix storage tier is based on the Symmetrix and VMAX family and is associated with Tier 1. You can change the default values to match your tier requirements. If the annotation is assigned by Insight (for example, Tier), you see "System-defined" when you position your cursor over the annotation's name on an asset page.

* A few resources (children of an asset) can derive the predefined Tier annotation from their asset (parent).

  For example, if you assign an annotation to a storage, the Tier annotation is derived by all the storage pools, internal volumes, volumes, qtrees, and shares belonging to the storage. If a different annotation is applied to an internal volume of the storage, the annotation is subsequently derived by all the volumes, qtrees, and shares. "Derived" appears next to the annotation name on an asset page.

Associating costs with annotations

Prior to running cost-related reports, you should associate costs with the Service Level, Switch Level, and Tier system-level annotations, which enables chargeback to the

storage users based on their actual usage of production and replicated capacity. For example, for the Tier level, you might have gold and silver tier values and assign a higher cost to the gold tier than to the silver tier.

Steps

1. Log in to the Insightweb UI.

2. Click Manage and select **Annotations**.

   The Annotation page displays.

3. Position your cursor over the Service Level, Switch Level, or Tier annotation, and click ✏.

   The Edit Annotation dialog box displays.

4. Enter the values for any existing levels in the **Cost** field.

   The Tier and Service Level annotations have Auto Tier and Object Storage values, respectively, which you cannot remove.

5.
   Click **+ Add** to add additional levels.

6. Click **Save** when you finish.

Creating custom annotations

Using annotations, you can add custom business-specific data that matches your business needs to assets. While OnCommand Insight provides a set of default annotations, you might find that you want to view data in other ways. The data in custom annotations supplements device data already collected, such as switch manufacturer, number of ports, and performance statistics. The data you add using annotations is not discovered by Insight.

Steps

1. Log in to the Insight web UI.

2. Click **Manage** and select **Annotations**.

   The Annotations page displays the list of annotations.

3. Click **+ Add** .

   The **Add Annotation** dialog box displays.

4. Enter a name and a description in the **Name** and **Description** fields.

   You can enter up to 255 characters in these fields.

   ⓘ | Annotation names beginning or ending with a dot "." are not supported.

5. Click **Type** and then select one of the following options that represents the type of data allowed in this annotation:

- Boolean

  This creates a drop-down list with the choices of yes and no. For example, the "Direct Attached" annotation is Boolean.

- Date

  This creates a field that holds a date. For example, if the annotation will be a date, select this.

- List

  This can create either of the following:

  - A drop-down fixed list

    When others are assigning this annotation type on a device, they cannot add more values to the list.

  - A drop-down flexible list

    If you select the **Add new values on the fly** option when you create this list, when others are assigning this annotation type on a device, they can add more values to the list.

- Number

  This creates a field where the user assigning the annotation can enter a number. For example, if the annotation type is "Floor", the user could select the Value Type of "number" and enter the floor number.

- Text

  This creates a field that allows free-form text. For example, you might enter "Language" as the annotation type, select "Text" as the value type, and enter a language as a value.

  (i) | After you set the type and save your changes, you cannot change the type of the annotation. If you need to change the type, you have to delete the annotation and create a new one.

6. If you select **List** as the annotation type, do the following:

   a. Select **Add new values on the fly** if you want the ability to add more values to the annotation when on an asset page, which creates a flexible list.

   For example, suppose you are on an asset page and the asset has the City annotation with the values Detroit, Tampa, and Boston. If you selected the **Add new values on the fly** option, you can add additional values to City like San Francisco and Chicago directly on the asset page instead of having to go to the Annotations page to add them. If you do not choose this option, you cannot add new annotation values when applying the annotation; this creates a fixed list.

   b. Enter a value and a name in **Value** and **Description** fields.

   c.
   Click **+ Add** to add additional values.

   d. Click 🗑 to remove a value.

7. Click **Save**.

   Your annotations appear in the list on the Annotations page.

Related information

Importing and Exporting user data

Manually assigning annotations to assets

Assigning annotations to assets helps you sort, group, and report on assets in ways that are relevant to your business. Although you can assign annotations to assets of a particular type automatically, using annotation rules, you can assign annotations to an individual asset by using its asset page.

Before you begin

You must have created the annotation you want to assign.

Steps

1. Log in to the OnCommand Insight web UI.
2. Locate the asset to which you want to apply the annotation by doing either of the following:
   - Click the asset in the Assets Dashboard.
   - Click ⊙▾ on the toolbar to display the **Search assets** box, type the type of or name of the asset, and then select the asset from the list that displays.

     The asset page displays.

3. In the **User Data** section of the asset page, click **+ Add** .

   The Add Annotation dialog box displays.

4. Click **Annotation** and select an annotation from the list.
5. Click **Value** and do either of the following, depending on type of annotation you selected:
   - If the annotation type is list, date, or Boolean, select a value from the list.
   - If the annotation type is text, type a value.
6. Click **Save**.
7. If you want to change the value of the annotation after you assign it, click 🖉 and select a different value.

   If the annotation is of list type for which the **Add values dynamically upon annotation assignment** option is selected, you can type to add a new value in addition to selecting an existing value.

Modifying annotations

You might want to change the name, description, or values for an annotation, or delete an annotation that you no longer want to use.

Steps

1. Log in to the OnCommand Insightweb UI.

2. Click **Manage** and select **Annotations**.

   The Annotations page displays.

3. Position your cursor over the annotation you want to edit and click ✏️.

   The **Edit Annotation** dialog box displays.

4. You can make the following modifications to an annotation:

   a. Change the name, description, or both.

      However, note that you can enter a maximum of 255 characters for both the name and description, and you cannot change the type of any annotation. Additionally, for system-level annotations, you cannot change the name or description; however, you can add or remove values if the annotation is a list type.

      > ⓘ If a custom annotation is published to the Data Warehouse and you rename it, you will lose historical data.

   b. To add another value to an annotation of list type, click ➕ Add .

   c. To remove a value from an annotation of list type, click 🗑️ .

      You cannot delete an annotation value if that value is associated with an annotation contained in an annotation rule, query, or performance policy.

5. Click **Save** when you finish.

After you finish

If you are going to use annotations in the Data Warehouse, you need to force an update of annotations in the Data Warehouse. Refer to the *OnCommand Insight Data Warehouse Administration Guide*.

Deleting annotations

You might want to delete an annotation that you no longer want to use. You cannot delete a system-level annotation or an annotation that is used in an annotation rule, query, or performance policy.

Steps

1. Log in to the OnCommand Insight web UI.

2. Click **Manage** and select **Annotations**.

   The Annotations page displays.

3. Position your cursor over the annotation you want to delete, and click 🗑️ .

   A confirmation dialog box displays.

4. Click **OK**.

Assigning annotations to assets using annotation rules

To automatically assign annotations to assets based on criteria that you define, you configure annotation rules. OnCommand Insight assigns the annotations to assets based on these rules. Insight also provides two default annotation rules, which you can modify to suit your needs or remove if you do not want to use them.

Default storage annotation rules

To expedite the assignment of storage annotations to your resources, OnCommand Insight includes 21 default annotation rules, which associate a tier level with a storage tier model. All of your storage resources are automatically associated with a tier upon acquisition of the assets in your environment.

The default annotation rules apply a tier annotations in the following way:

* Tier 1, storage quality tier

  The Tier 1 annotation is applied to the following vendors and their specified families: EMC (Symmetrix), HDS (HDS9500V, HDS9900, HDS9900V, R600, R700, USP r, USP V), IBM (DS8000), NetApp (FAS6000 or FAS6200), and Violin (Memory).

* Tier 2, storage quality tier

  The Tier 2 annotation is applied to the following vendors and their specified families: HP (3PAR StoreServ or EVA), EMC (CLARiiON), HDS (AMS or D800), IBM (XIV), and NetApp (FAS3000, FAS3100, and FAS3200).

You can edit the default settings of these rules to match your tier requirements, or you can remove them if you do not need them.

Creating annotation rules

As an alternative to manually applying annotations to individual assets, you can automatically apply annotations to multiple assets using annotation rules. Annotations set manually on an individual asset pages take precedence over rule-based annotations when Insight evaluates the annotation rules.

Before you begin

You must have created a query for the annotation rule.

About this task

Although you can edit the annotation types while you are creating the rules, you should have defined the types ahead of time.

Steps

1. Log in to the OnCommand Insight web UI.

2. Click **Manage** and select **Annotation rules**.

   The Annotation Rules page displays the list of existing annotation rules.

3. Click **+ Add**.

   The Add Rule dialog box displays.

4. Do the following:

   a. In the **Name** box, enter a unique name that describes the rule.

      This name will appear in the Annotation Rules page.

   b. Click **Query** and select the query that OnCommand Insight should use to apply the annotation to assets.

   c. Click **Annotation** and select the annotation you want to apply.

   d. Click **Value** and select a value for the annotation.

      For example, if you choose Birthday as the annotation, you specify a date for the value.

5. Click **Save**.

6. Click **Run all rules** if you want to run all the rules immediately; otherwise, the rules are run at a regularly scheduled interval.

Setting annotation rule precedence

By default, OnCommand Insight evaluates annotation rules sequentially; however, you can configure the order in which OnCommand Insight evaluates annotation rules if you want Insight to evaluate rules in a specific order.

Steps

1. Log in to the Insightweb UI.

2. Click **Manage** and select **Annotation rules**.

   The Annotation Rules page displays the list of existing annotation rules.

3. Position your cursor over an annotation rule.

   The precedence arrows appear to the right of the rule.

4. To move a rule up or down in the list, click the up arrow or the down arrow.

   By default, new rules are added sequentially to the list of rules. Annotations set manually on an individual asset pages take precedence over rule-based annotations when Insight evaluates the annotation rules.

Modifying annotation rules

You can modify an annotation rule to change the rule's name, its annotation, the annotation's value, or the query associated with the rule.

Steps

1. Log in to the OnCommand Insightweb UI.

2. Click **Manage** and select **Annotation rules**.

   The Annotation Rules page displays the list of existing annotation rules.

3. Locate the rule that you want to modify:

   ◦ On the Annotation Rules page, you can filter the annotation rules by entering a value in the filter box.

   ◦ Click a page number to browse through the annotation rules by page if there are more rules than fit on a page.

4. Perform one of the following to display the **Edit Rule** dialog box:

   ◦ If you are on theAnnotation Rules page, position your cursor over the annotation rule and click .

   ◦ If you are on an asset page, position your cursor over the annotation associated with the rule, position your cursor over the rule name when it displays, and then click the rule name.

5. Make the required changes and click **Save**.

Deleting annotation rules

You can delete an annotation rule when the rule is no longer required to monitor the objects in your network.

Steps

1. Log in to the OnCommand Insightweb UI.

2. Click **Manage**, and select **Annotation rules**.

   The Annotation Rules page displays the list of existing annotation rules.

3. Locate the rule that you want to delete:

   ◦ On the Annotation Rules page, you can filter the annotation rules by entering a value in the filter box.

   ◦ Click a page number to browse through the annotation rules by page if there are more rules than fit on a single page.

4. Point the cursor over the rule that you want to delete, and then click .

   A confirmation message is displayed, prompting whether you want to delete the rule.

5. Click **OK**.

Importing annotation values

If you maintain annotations on SAN objects (such as storage, hosts, and virtual machines) in a CSV file, you can import that information into OnCommand Insight. You can import applications, business entities, or annotations such as tier and building.

About this task

The following rules apply:

- If an annotation value is empty, that annotation is removed from the object.
- When annotating volumes or internal volumes, the object name is a combination of storage name and volume name using the dash and arrow (->) separator:

  ```
  <storage_name>-><volume_name>
  ```

- When storage, switches, or ports are annotated, the Application column is ignored.
- The columns of Tenant, Line_of_Business, Business_Unit, and Project make up a business entity.

  Any of the values can be left empty. If an application is already related with a business entity different from the input values, the application is assigned to the new business entity.

The following object types and keys are supported in the import utility:

Type	Key
Host	`id-><id>` or `<Name>` or `<IP>`
VM	`id-><id>` or `<Name>`
Storage pool	`id-><id>` or `<Storage_name>-><Storage_Pool_name>`
Internal volume	`id-><id>` or `<Storage_name>-><Internal_volume_name>`
Volume	`id-><id>` or `<Storage_name>-><Volume_name>`
Storage	`id-><id>` or `<Name>` or `<IP>`
Switch	`id-><id>` or `<Name>` or `<IP>`
Port	`id-><id>` or `<WWN>`
Share	`id-><id>` or `<Storage Name>-><Internal Volume Name>-><Share Name>-><Protocol>` `<Qtree>` is optional if there is a default qtree.
Qtree	`id-><id>` or `<Storage Name>-><Internal Volume Name>-><Qtree Name>`

The CSV file should use the following format:

```
, , <Annotation Type> [, <Annotation Type> ...]
[, Application] [, Tenant] [, Line_Of_Business] [,
Business_Unit] [, Project]

<Object Type Value 1>, <Object Key 1>, <Annotation Value> [,
<Annotation Value> ...] [, <Application>] [, <Tenant>] [,
<Line_Of_Business>] [, <Business_Unit>] [, <Project>]


...


<Object Type Value N>, <Object Key N>, <Annotation Value> [,
<Annotation Value> ...] [, <Application>] [, <Tenant>] [,
<Line_Of_Business>] [, <Business_Unit>] [, <Project>]
```

Steps

1. Log in to the Insight web UI.
2. Click **Admin** and select **Troubleshooting**.

   The Troubleshooting page displays.

3. In the **Other tasks section** of the page, click the **OnCommand Insight Portal** link.
4. Click **Insight Connect API**.
5. Log in to the portal.
6. Click **Annotation Import Utility**.
7. Save the `.zip` file, unzip it, and read the `readme.txt` file for additional information and samples.
8. Place the CSV file in same folder as the `.zip` file.
9. In the command line window, enter the following:

   ```
   java -jar rest-import-utility.jar [-uusername] [-ppassword]
   [-aserver name or IP address] [-bbatch size] [-ccase
   sensitive:true/false]
   [-lextra logging:true/false] csv filename
   ```

   The -l option, which enables extra logging, and the -c option, which enables case sensitivity, are set to false by default. Therefore, you must specify them only when you want to use the features.

   ⓘ   There are no spaces between the options and their values.

(i) The following keywords are reserved and prevent users from specifying them as annotation names: - Application - Application_Priority - Tenant - Line_Of_Business - Business_Unit - Project Errors are generated if you attempt to import an annotation type using one of the reserved keywords. If you have created annotation names using these keywords, you must modify them so that the import utility tool can work correctly.

(i) The Annotation Import utility requires Java 8 or Java 11. Ensure that one of those is installed prior to running the import utility. It is recommended to use the latest OpenJDK 11.

Assigning annotations to multiple assets using a query

Assigning an annotation to a group of assets helps you more easily identify or use those related assets in queries or dashboards.

Before you begin

Annotations that you wish to assign to assets must have previously been created.

About this task

You can simplify the task of assigning an annotation to multiple assets by using a query. For example, if you want to assign a custom address annotation to all of your arrays at a specific data center location.

Steps

1. Create a new query to identify the assets on which you wish to assign an annotation. Click **Queries** > **+New Query**.

2. In the **Search for…** drop-down, choose **Storage**. You can set filters to further narrow down the list of storages displayed.

3. In the list of storages displayed, select one or more by clicking on the check box beside the storage name. You may also select all the displayed storages by clicking on the main check box at the top of the list.

4. When you have selected all of the desired storages, click **Actions** > **Edit Annotation**.

   The system displays the Add Annotation dialog.

5. Select the **Annotation** and **Value** you want to assign to the storages and click **Save**.

   If you are displaying the column for that annotation, it will appear on all the selected storages.

6. You can now use the annotation to filter for storages in a widget or query. In a widget, you can do the following:

   a. Create a dashboard or open an existing one. Add a **Variable** and choose the annotation you set on the storages above. The variable is added to the dashboard.

   b. In the variable field you just added, click on **Any** and enter the appropriate Value to filter on. Click on the check mark to save the variable value.

   c. Add a widget. In the widget's Query, click on the **Filter by+** button and select the appropriate annotation from the list.

d. Click on **Any** and select the annotation variable you added above. Variables you have created start with "$" and are displayed in the drop-down.

e. Set any other filters or fields you desire, then click **Save** when the widget is customized to your liking.

The widget on the dashboard displays the data for only the storages to which you assigned the annotation.