# Asset Page Information

## Cloud Insights

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# Asset Page Information

## Asset Page Overview

Asset pages summarize the current status of an asset and contain links to additional information about the asset and its related assets.

### Types of Asset Pages

Cloud Insights provides asset pages for the following assets:

- Virtual machine
- Storage Virtual Machine (SVM)
- Volume
- Internal volume
- Host (including Hypervisor)
- Storage pool
- Storage
- Datastore
- Application
- Storage node
- Qtree
- Disk
- VMDK
- Port
- Switch
- Fabric

### Changing the Time Range of Displayed Data

By default, an asset page displays the last 24 hours of data; however, you can change the segment of data displayed by selecting another fixed time range or a custom range of time to view less or more data.

You can change the time segment of displayed data by using an option that is located on every asset page, regardless of asset type. To change the time range, click the displayed time range in the top bar and choose from among the following time segments:

- Last 15 Minutes
- Last 30 Minutes
- Last 60 Minutes
- Last 2 Hours
- Last 3 Hours (this is the default)
- Last 6 Hours

- Last 12 Hours
- Last 24 Hours
- Last 2 Days
- Last 3 Days
- Last 7 Days
- Last 30 Days
- Custom time range

The Custom time range allows you to select up to 31 consecutive days. You can also set the Start Time and End Time of day for this range. The default Start Time is 12:00 AM on the first day selected and the default End Time is 11:59 PM on the last day selected. Clicking Apply will apply the custom time range to the asset page.

### Add Custom Widgets

You can add your own widgets to any asset page. Widgets you add will appear on asset pages for all objects of that type. For example, adding a custom widget to a storage asset page will display that widget on asset pages for all storage assets.

# Filtering for Objects In-Context

When configuring a widget on an asset's landing page, you can set *in-context* filters to show only objects directly related to the current asset. By default, when you add a widget, *all* objects of the selected type in your environment are displayed. In-context filters allow you to display only the data relevant to your current asset.

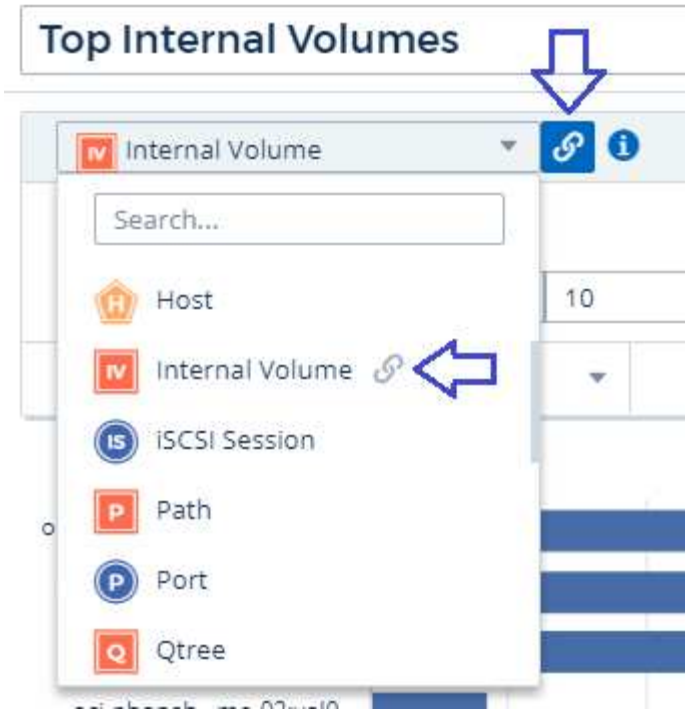
On most asset landing pages, widgets allow you to filter for objects related to the current asset. In filter drop-downs, object types that display a link icon can be filtered in-context to the current asset.

For example, on a Storage asset page, you can add a Bar Chart widget to show the top IOPS on internal volumes only on that storage. By default, when you add a widget, *all* internal volumes in your environment are displayed.

To show only internal volumes on the current storage asset, do the following:

**Steps**

1. Open an asset page for any **Storage** asset.
2. Click **Edit** to open the asset page in Edit mode.
3. Click **Add Widget** and select *Bar Chart*.
4. Select **Internal Volume** for the object type to display on the bar chart. Notice that the internal volume object type has a link icon beside it. The "linked" icon is enabled by default.




5. Choose *IOPS - Total* and set any additional filters you like.
6. Collapse the **Roll Up** field by clicking the [X] beside it. The **Show** field is displayed.
7. Choose to show Top 10.
8. Save the widget.

   The bar chart shows only the internal volumes that reside on the current storage asset.

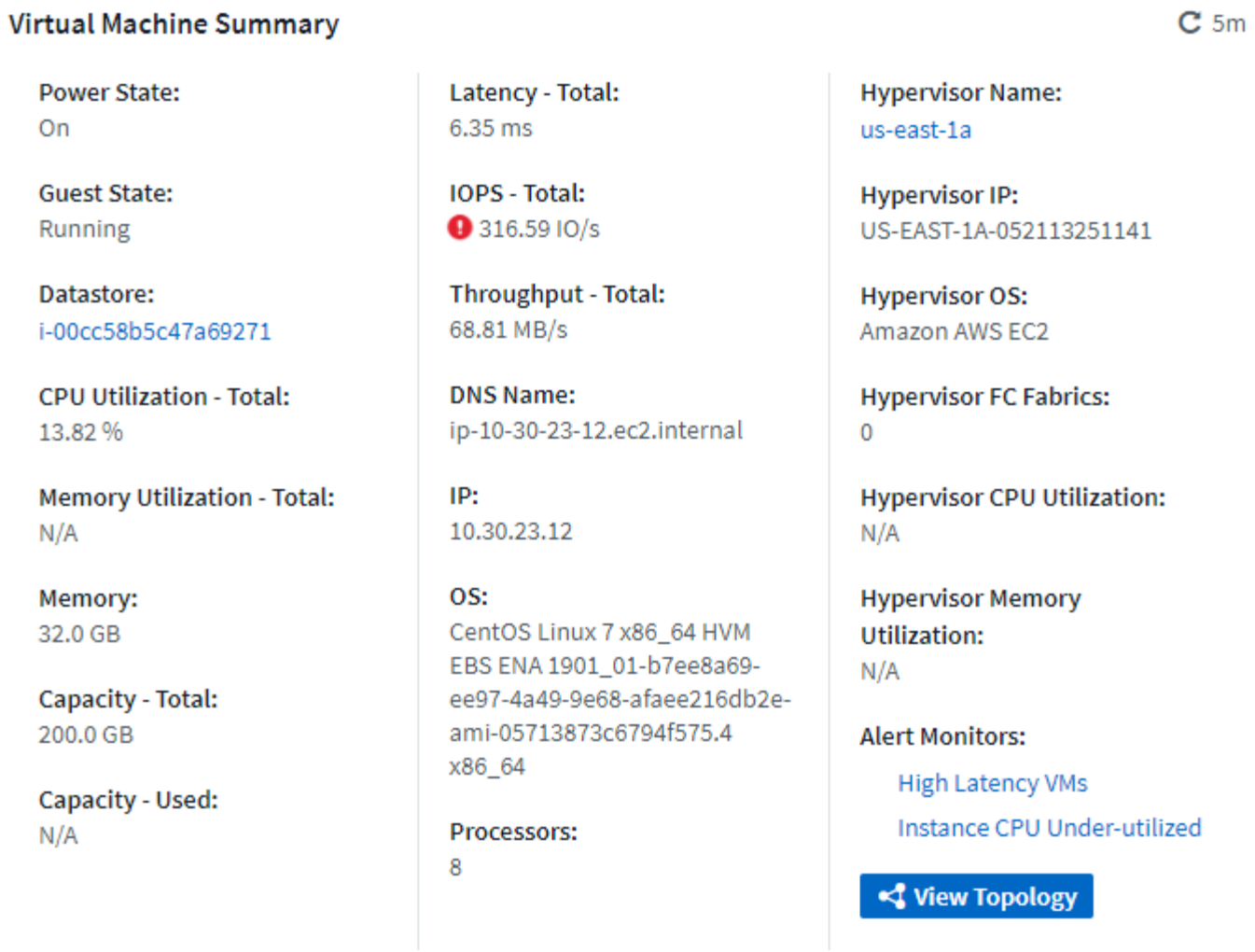
The widget will be displayed on the asset pages for all storage objects. When the in-context link is enabled in the widget, the bar chart shows data for internal volumes related only to the currently-displayed storage asset.

To unlink the object data, edit the widget and click the link icon next to the object type. The link becomes disabled and the chart displays data for *all* objects in your environment.

You can also use **special variables in widgets** to display asset-related information on landing pages.

# Asset Page Summary section

The Summary section of an asset page displays general information about an asset, including whether any metrics or performance policies are cause for concern. Potential problem areas are indicated by a red circle.




Note: The information displayed in the Summary section varies, depending on the type of asset you are viewing.

You can click any of the asset links to view their asset pages. For example, if you are viewing a storage node, you can click a link to view the asset page of the storage it is associated with.

You can view the metrics associated with the asset. A red circle next to a metric indicates that you might need to diagnose and resolve potential problems.

You may notice that volume capacity might show greater than 100% on some storage assets. This is due to metadata related to the capacity of the volume being part of the consumed capacity data reported by the asset.

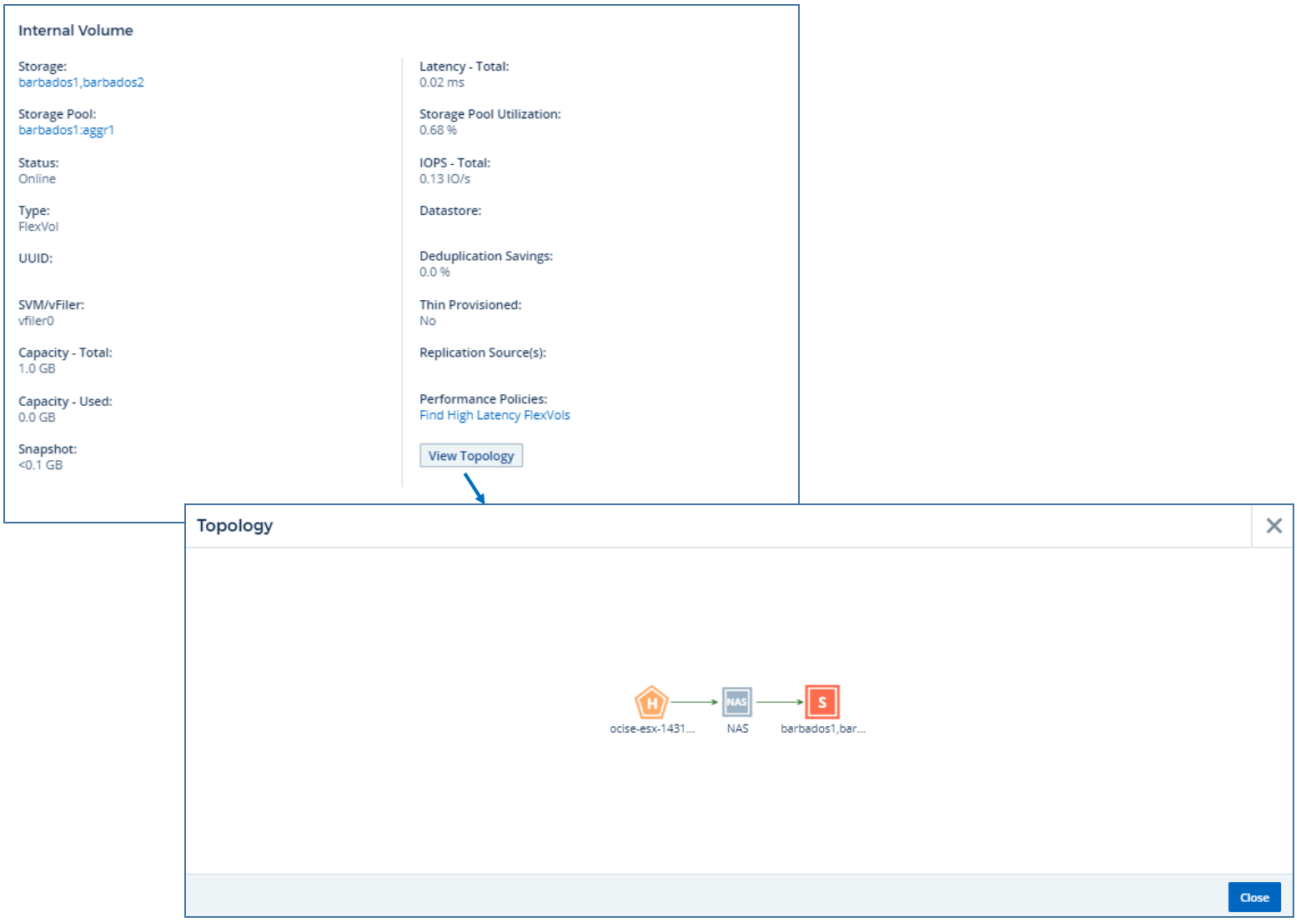
If applicable, you can click an alert link to view the alert and monitor associated with the asset.

## Topology

On certain asset pages, the summary section contains a link to view the topology of the asset and its connections.

Topology is available for the following asset types:

- Application
- Disk
- Fabric
- Host
- Internal Volume
- Port
- Switch
- Virtual Machine
- VMDK
- Volume

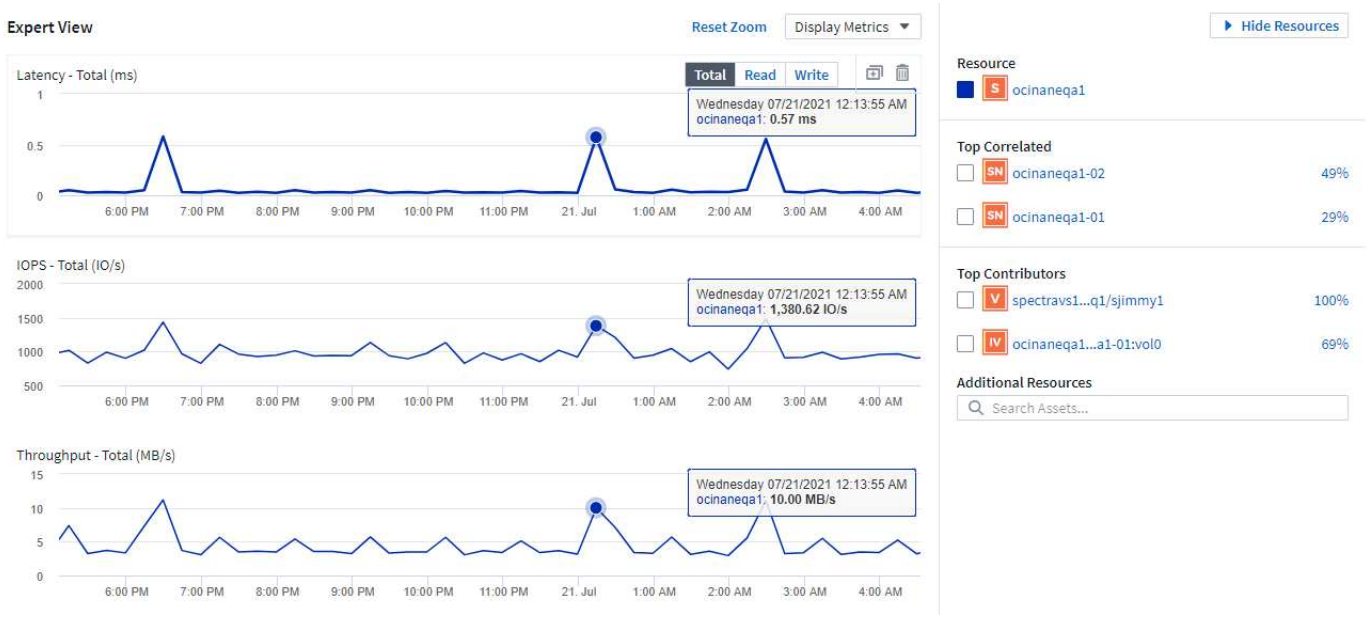



# Expert View

The Expert View section of an asset page enables you to view a performance sample for the base asset based on any number of applicable metrics in context with a chosen time period in the performance chart and any assets related to it.

## Using the Expert View section

The following is an example of the Expert View section in a storage asset page:




You can select the metrics you want to view in the performance chart for the time period selected. Click on the *Display Metrics* drop-down and choose from the metrics listed.

The **Resources** section shows the name of the base asset and the color representing the base asset in the performance chart. If the **Top Correlated** section does not contain an asset you want to view in the performance chart, you can use the **Search Assets** box in the **Additional Resources** section to locate the asset and add it to the performance chart. As you add resources, they appear in the Additional resources section.

Also shown in the Resources section, when applicable, are any assets related to the base asset in the following categories:

- Top correlated

  Shows the assets that have a high correlation (percentage) with one or more performance metrics to the base asset.

- Top contributors

  Shows the assets that contribute (percentage) to the base asset.

- Workload Contentions

  Shows the assets that impact or are impacted by other shared resources, such as hosts, networks, and storage. These are sometimes called *greedy* and *degraded* resources.

## Alerts in Expert View

Alerts are also displayed in the Expert View section of an asset landing page, showing the time and duration of the alert as well as the monitor condition that triggered it.

## Expert View metric definitions

The Expert View section of an asset page displays several metrics based on the time period selected for the asset. Each metric is displayed in its own performance chart. You can add or remove metrics and related assets from the charts depending on what data you want to see. The metrics you can choose will vary depending on asset type.

| Metric | Description |
|---|---|
| BB credit zero Rx, Tx | Number of times the receive/transmit buffer-to-buffer credit count transitioned to zero during the sampling period. This metric represents the number of times the attached port had to stop transmitting because this port was out of credits to provide. |
| BB credit zero duration Tx | Time in milliseconds during which the transmit BB credit was zero during the sampling interval. |
| Cache hit ratio (Total, Read, Write) % | Percentage of requests that result in cache hits. The higher the number of hits versus accesses to the volume, the better is the performance. This column is empty for storage arrays that do not collect cache hit information. |
| Cache utilization (Total) % | Total percentage of cache requests that result in cache hits |
| Class 3 discards | Count of Fibre Channel Class 3 data transport discards. |
| CPU utilization (Total) % | Amount of actively used CPU resources, as a percentage of total available (over all virtual CPUs). |
| CRC error | Number of frames with invalid cyclic redundancy checks (CRCs) detected by the port during the sampling period |
| Frame rate | Transmit frame rate in frames per second (FPS) |
| Frame size average (Rx, Tx) | Ratio of traffic to frame size. This metric enables you to identify whether there are any overhead frames in the fabric. |
| Frame size too long | Count of Fibre Channel data transmission frames that are too long. |

| | |
|---|---|
| Frame size too short | Count of Fibre Channel data transmission frames that are too short. |
| I/O density (Total, Read, Write) | Number of IOPS divided by used capacity (as acquired from the most recent inventory poll of the data source) for the Volume, Internal Volume or Storage element. Measured in number of I/O operations per second per TB. |
| IOPS (Total, Read, Write) | Number of read/write I/O service requests passing through the I/O channel or a portion of that channel per unit of time (measured in I/O per sec) |
| IP throughput (Total, Read, Write) | Total: Aggregated rate at which IP data was transmitted and received in megabytes per second. |
| Read: IP Throughput (Receive): | Average rate at which IP data was received in megabytes per second. |
| Write: IP Throughput (Transmit): | Average rate at which IP data was transmitted in megabytes per second. |
| Latency (Total, Read, Write) | Latency (R&W): Rate at which data is read or written to the virtual machines in a fixed amount of time. The value is measured in megabytes per second. |
| Latency: | Average response time from the virtual machines in a data store. |
| Top Latency: | The highest response time from the virtual machines in a data store. |
| Link failure | Number of link failures detected by the port during the sampling period. |
| Link reset Rx, Tx | Number of receive or transmit link resets during the sampling period. This metric represents the number of link resets that were issued by the attached port to this port. |
| Memory utilization (Total) % | Threshold for the memory used by the host. |
| Partial R/W (Total) % | Total number of times that a read/write operation crosses a stripe boundary on any disk module in a RAID 5, RAID 1/0, or RAID 0 LUN Generally, stripe crossings are not beneficial, because each one requires an additional I/O. A low percentage indicates an efficient stripe element size and is an indication of improper alignment of a volume (or a NetApp LUN). For CLARiiON, this value is the number of stripe crossings divided by the total number of IOPS. |
| Port errors | Report of port errors over the sampling period/given time span. |
| Signal loss count | Number of signal loss errors. If a signal loss error occurs, there is no electrical connection, and a physical problem exists. |

| | |
|---|---|
| Swap rate (Total Rate, In rate, Out rate) | Rate at which memory is swapped in, out, or both from disk to active memory during the sampling period. This counter applies to virtual machines. |
| Sync loss count | Number of synchronization loss errors. If a synchronization loss error occurs, the hardware cannot make sense of the traffic or lock onto it. All the equipment might not be using the same data rate, or the optics or physical connections might be of poor quality. The port must resynchronize after each such error, which impacts system performance. Measured in KB/sec. |
| Throughput (Total, Read, Write) | Rate at which data is being transmitted, received, or both in a fixed amount of time in response to I/O service requests (measured in MB per sec). |
| Timeout discard frames - Tx | Count of discarded transmit frames caused by timeout. |
| Traffic rate (Total, Read, Write) | Traffic transmitted, received, or both received during the sampling period, in mebibytes per second. |
| Traffic utilization (Total, Read, Write) | Ratio of traffic received/transmitted/total to receive/transmit/total capacity, during the sampling period. |
| Utilization (Total, Read, Write) % | Percentage of available bandwidth used for transmission (Tx) and reception (Rx). |
| Write pending (Total) | Number of write I/O service requests that are pending. |

## Using the Expert View section

The Expert view section enables you to view performance charts for an asset based on any number of applicable metrics during a chosen time period, and to add related assets to compare and contrast asset and related asset performance over different time periods.

**Steps**

1. Locate an asset page by doing either of the following:
   - Search for and select a specific asset.
   - Select an asset from a dashboard widget.
   - Query for a set of assets and select one from the results list.

     The asset page displays. By default, the performance chart shows two metrics for time period selected for the asset page. For example, for a storage, the performance chart shows latency and total IOPS by default. The Resources section displays the resource name and an Additional resources section, which enables you to search for assets. Depending on the asset, you might also see assets in the Top correlated, Top contributor, Greedy, and Degraded sections. If there are no assets relevant to these sections, they are not displayed.
2. You can add a performance chart for a metric by clicking **Display Metrics** and selecting the metrics you want displayed.

   A separate chart is displayed for each metric selected. The chart displays the data for the selected time

period. You can change the time period by clicking on another time period in the top right corner of the asset page, or by zooming in on any chart.

Click on **Display Metrics** to de-select any chart. The performance chart for the metric is removed from Expert View.

3. You can position your cursor over the chart and change the metric data that displays for that chart by clicking any of the following, depending on the asset:
   - Read, Write, or Total
   - Tx, Rx, or Total

     Total is the default.

     You can drag your cursor over the data points in the chart to see how the value of the metric changes over the time period selected.

4. In the Resources section, you can add any related assets to the performance charts:
   - You can select a related asset in the **Top Correlated**, **Top Contributors**, **Greedy**, and **Degraded** sections to add data from that asset to the performance chart for each selected metric.

     After you select the asset, a color block appears next to the asset to denote the color of its data points in the chart.

5. Click on **Hide Resources** to hide the additional resources pane. Click on **Resources** to show the pane.
   - For any asset shown, you can click the asset name to display its asset page, or you can click the percentage that the asset correlates or contributes to the base asset to view more information about the asset's relation to the base asset.

     For example, clicking the linked percentage next to a top correlated asset displays an informational message comparing the type of correlation that asset has with the base asset.

   - If the Top correlated section does not contain an asset you want to display in a performance chart for comparison purposes, you can use the Search assets box in the Additional resources section to locate other assets.

After you select an asset, it displays in the additional resources section. When you no longer want to view information about the asset, click 🗑.

# User Data Section

The User Data section of an asset page displays and enables you to change any user-defined data such as applications and annotations.

## Using the User Data section to assign or modify applications

You can assign applications running in your environment to certain assets (host, virtual machines, volumes, internal volumes, qtrees, and hypervisors). The User Data section enables you to add, change, or remove the applications assigned to an asset. For all of these asset types except for volumes, you can assign more than one application.

**Steps**

1. Locate an asset page by doing any of the following:

a. Query for a list of assets and then select one from the list.
b. On a Dashboard, locate an asset name and click it.
c. Perform a search and choose an asset from the results.

   The asset page displays. The User Data section of the page shows currently-assigned applications or annotations.

To change the application assigned, or to assign an application or additional applications, drop down the **Application** list and select the application(s) you want to assign to the asset. You can type to search for an application, or select one from the list.

To remove an application, drop down the application list and un-check the application.

### Using the User Data section to assign or modify annotations

When customizing Cloud Insights to track data for your corporate requirements, you can define specialized notes called annotations, and assign them to your assets. The User Data section of an asset page displays annotations assigned to an asset and also enables you to change the annotations assigned to that asset.

**Steps**

1. To add an annotation to the asset, in the User Data section of the asset page, click **+Annotation**.
2. Select an annotation from the list.
3. Click Value and do either of the following, depending on type of annotation you selected:
   a. If the annotation type is list, date, or Boolean, select a value from the list.
   b. If the annotation type is text, type a value.
4. Click Save.

The annotation is assigned to the asset. You can later filter assets by annotation using a query.

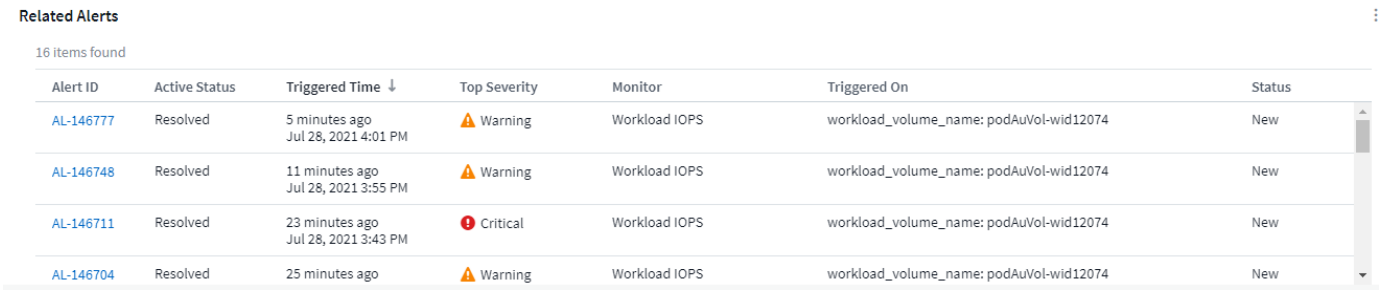
If you want to change the value of the annotation after you assign it, drop down the annotation list and enter a different value.

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

# Asset Page Related Alerts section

You can use the Related Alerts section of an asset page to see any alerts that occur in your environment as a result of a monitor assigned to an asset. Monitors generate alerts based on conditions you set, and enable you to identify the implication and analyze the impact and root cause of the problem in a manner that enables rapid and effective correction.

The following example shows a typical Related Alerts section that displays on an asset page:




The Related Alerts section enables you to view and manage the alerts that occur in your network as the result of monitor conditions assigned to an asset.

**Steps**

- Locate an asset page by doing any of the following:
  - Type the name of the asset in the Search area, and then select the asset from the list.
  - In a dashboard widget, click on the name of an asset.
  - Query for a set of assets and select on from the results list.

The asset page displays. The Related Alerts section displays the time the alert was triggered as well as current status of the alert and the monitor that triggered it. You can click the Alert ID to open the landing page for the alert for further investigation.

## Prefix and suffix search

As soon as you start typing a search string, the search engine does a prefix and suffix search to find the best match.

Exact matches are given a higher score than a prefix or suffix match. The score is calculated based on the distance of the search term from the actual search result. For example, we have three storages: "aurora", "aurora1", and "aurora11". Searching for "aur" will return all three storages. However, the search result for "aurora" will have the highest score because it has the closest distance to the prefix search string.

The search engine also searches for terms in reverse order, which allows you to perform a suffix search. For example, when you type "345" in the search box, the search engine searches for "345".