OnCommand® Insight 7.2

# Getting Started Guide

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NetApp®

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# OnCommand Insight overview

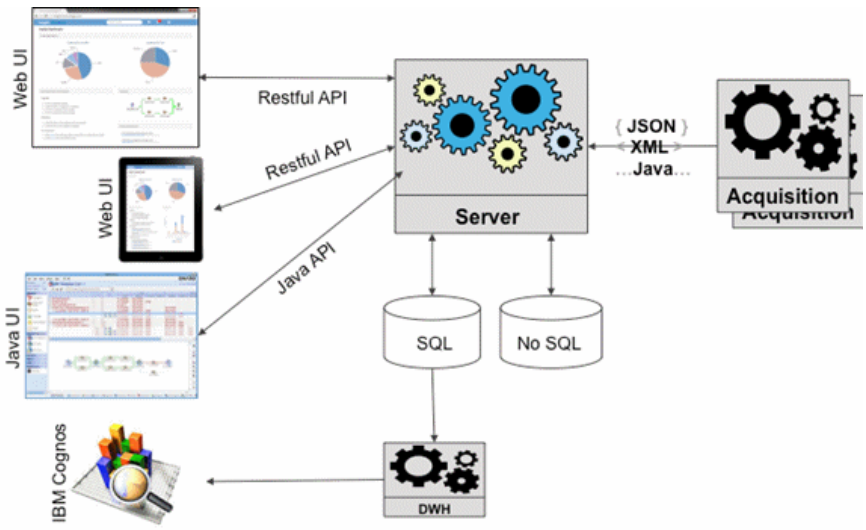
OnCommand Insight enables you to simplify operational management of complex private and hybrid cloud and virtual IT environments. Insight is a single solution to enable cross-domain, multi-vendor resource management and analysis across networks, storage, and servers in physical and virtual environments.

Insight provides a “single pane of glass” for reporting on storage costs and provides the transparency needed to make decisions about performance and efficiency.

## Insight architecture

OnCommand Insight enables you to administer your product easily, using a streamlined system architecture that includes the Insight Server, a collection engine, web-based and Java UIs, and data warehousing.

The major components of the Insight architecture are shown in this diagram and described after it:




**OnCommand Insight Server**

The OnCommand Insight Server is the “brain” of the application. It includes main data repository and analysis components. The server is continuously building an end-to-end topology of the environment, analyzing it, and generating alerts when an incident or violation is detected.

**Acquisition units**

The Insight collection engine is built of one or more acquisition units. Each acquisition unit is a service running in the network that accesses (through modules called *data sources*) and collects data from different devices in the data center. Information collected by the acquisition units is then sent to the server (in an XML, JSON, or native Java format) for analysis.

The collection engine is designed to be highly modular and easily patched.

**Web UI**

The HTML5 web-based user interface (UI) for Insight enables you to set up your monitoring environment and data sources. You then use the web UI Asset Dashboard and asset pages to identify and research potential problems.

**Java UI**

This is the OnCommand Insight user interface (UI) or Client. You can use the Java UI to research issues like Fibre Channel mappings in your environment.

**Data Warehouse (DWH)**

Consolidates and prepares data for reporting for one or multiple installations of Insight. This includes history, trending, inventory, chargeback, show back and presenting the data in different ways to enable long-term planning of the data center's infrastructure.

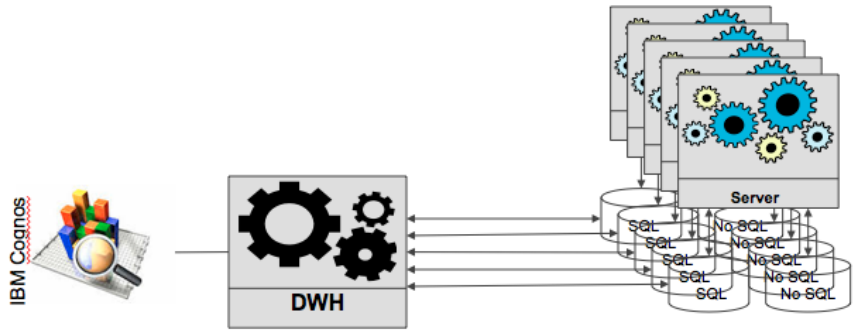
**IBM Cognos**

This software is a reporting engine that provides a user interface for creating enterprise-level reports.

## Insight Data Warehouse architecture

In a large environment, the OnCommand Insight Data Warehouse (DWH) consolidates data across different installations and hence different Insight data centers.

As shown in this diagram, the architecture enables users to view their entire environment and generate meaningful reports through a “single pane of glass” interface:

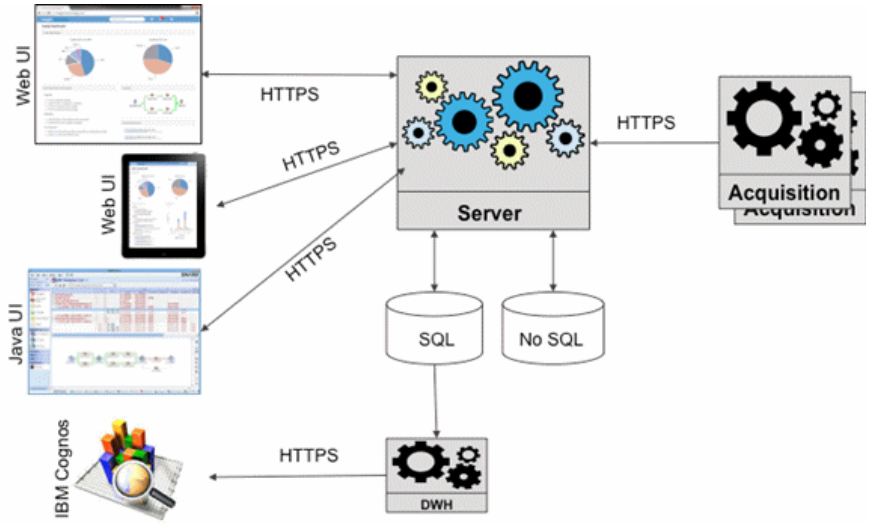



## Firewall-friendly architecture

The OnCommand Insight architecture enables you to easily create firewalls around the product so that your assets are more secure.

As shown in the diagram, the architecture has these firewall features:

- All OCI clients use HTTPS to communicate with the server.
- The acquisition units enable only *outgoing* HTTPS connections; no ports are opened on the acquisition unit processes.




## How Insight is used by administrators, managers, and planners

OnCommand Insight supplies information that is vital for storage administrators, managers, and storage architects to perform troubleshooting and analysis.

Experienced storage administrators use OnCommand Insight along with their network storage knowledge to accomplish these typical tasks:

- Manage the SAN and NAS environment.
- Work with SAN engineers on network concerns.
- Evaluate, test, and integrate new storage technologies into the environment.
- Troubleshoot performance issues, alerts, policy breaches, violations, and vulnerabilities.

Managers and network planners use OnCommand Insight to perform these business tasks:

- Capacity planning
- Develop project budgets and timelines.
- Evaluate and revise project plans to meet changing project demands.
- Manage project planning and expenses.
- Purchase hardware and software.
- Provide business reports for capacity management, charge back billing, right sizing, and service level agreements.

# Finding answers to your Insight questions

OnCommand Insight provides you with product documentation as online Help and PDF guides. The web UI Help includes all of the Insight installation and upgrade instructions and information about the new web UI.

#### About this task

You can access the Insight documentation from the Help menu.

#### Steps

1. To display the documentation within the web UI, open Insight in your browser.
2. On the toolbar, click the question mark and select either of these options from the menu:
   - **Help topics**
     Insight documentation including installation and configuration
   - **Java UI Help**
     Instructions for using the Insight Client

## Accessing Help directly

If you want to search the OnCommand Insight Help without opening the software, you can run both WebHelp versions in your browser from their server locations.

#### Before you begin

OnCommand Insight 7.x must be installed.

#### Steps

1. Open your browser.
2. Enter the URL for your Insight server with the Help directory using these formats for the corresponding Insight versions:
   - Web UI Help: `https://<oci_server_name>/documentation/oci_webhelp/index.html`
   - Java UI Help: `https://<oci_server_name>/legacy/help/webhelp/index.html`
3. Use the Search function or Index to locate the information you want.

## Locating product information on the NetApp Support Site

The NetApp Support Site maintains full documentation sets in different formats. Videos showing you how to perform tasks in Insight are available on the Communities site.

#### About this task

You must have a NetApp Customer Support login name and password to access the Support and Communities sites.

#### Steps

1. To view all Insight product documentation, navigate to the product libraries on the NetApp Support Site.

a. Select OnCommand Insight.

b. Locate the Release number that you installed in the list of Insight releases.

c. Select the documents and formats that you want.

**2.** To run demonstration videos, open the NetApp Communities site.

a. Navigate to the Insight Communities site.

b. Select the **Content** tab.

c. Select the **Videos** tab.

# Defining your environment

After you install OnCommand Insight, you must install your licenses and then set up Insight to monitor your environment, usually beginning with the data sources.

The OnCommand Insight configuration information is available in the Help and in the *OnCommand Insight Configuration and Administration Guide* on the NetApp Support Site.

## Accessing the web UI

After you install OnCommand Insight, you must install your licenses and then set up Insight to monitor your environment. To do this, you use a web browser to access the Insight client (web UI).

### Steps

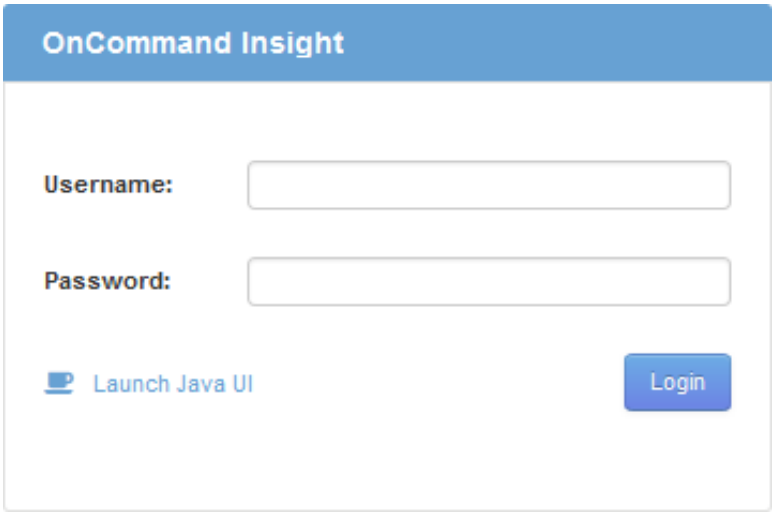
1. Do one of the following:
   - Open Insight on the Insight server:

     **`https://fqdn`**
   - Open Insight from any other location:

     **`https://fqdn:port`**

     The port number is either 443 or another port configured when the Insight server was installed. The port number defaults to 443 if you do not specify it in the URL.

   The OnCommand Insight dialog box displays:




2. Enter your user name and password and click **Login**.

   The following table shows the default user name and password. Change these defaults as soon as possible after installation:

| Data | Value |
|---|---|
| Default user name | **`admin`** |
| Default password | **`admin123`** |

If the licenses have been installed, the data source setup page displays.

**Note:** An Insight browser session that is inactive for 30 minutes is timed out and you are logged out of the system.

## Insight browser support

OnCommand Insight can operate on different browsers, providing you with the flexibility to choose the browser that is appropriate for your environment.

Insight supports the following browsers:

| Insight component | Requirement |
|---|---|
| Insight web UI | Microsoft Internet Explorer 10 and later<br>Mozilla Firefox 23 and later<br>Chrome 29 and later |
| Reporting Connection (IBM Cognos)<br>**Note:** Insight Linux installations do not support the Reporting Connection. | Microsoft Internet Explorer 9 and later (10 and later in compatibility mode)<br>Mozilla Firefox 24 and later (ESR version)<br>Chrome 32 or later (can be used only to run reports and cannot be used for authoring) |

# Installing your Insight licenses

After you receive the license file containing the Insight license keys from NetApp, you can use the setup features to install all of your licenses at the same time.

### About this task

Insight license keys are stored in a `.txt` or `.lcn` file.

### Steps

1. Open the license file in a text editor and copy the text.
2. Open Insight in your browser.
3. Click the **Admin** icon on the toolbar.
4. Click **Setup**.
5. Click the **Licenses** tab.
6. Click **Update License**.
7. Copy the license key text into the **License** text box.
8. Select the **Update (most common)** operation.
9. Click **Save**.

### After you finish

After installing the licenses, you can perform these configuration tasks:

- Configure data sources.
- Create OnCommand Insight user accounts.

See the Insight Help or the *OnCommand Insight Configuration and Administration Guide* for instructions.

# Defining your monitoring environment

After installing OnCommand Insight, you also need to apply your licenses, configure data sources, and define the user accounts. You might also want to define the backup process.

### Steps

1. Open OnCommand Insight in your browser.
2. If this is the first time you have opened the software, the Setup area opens to allow you to enter your licenses.
3. After the licenses are entered, click the **Admin** icon on the toolbar.

   If you have previously configured OnCommand Insight, the circled number on this icon indicates the number of problems detected.
4. If you are setting up a newly installed OnCommand Insight system, you need to use these options to configure your system:
   - **Data Sources**
   - **Setup** for user accounts and email and SNMP notifications

### After you finish

These tasks are described in the Help and in the *OnCommand Insight Configuration and Administration Guide*.

### Related concepts

*Insight data source management* on page 14

### Related tasks

*Accessing Help directly* on page 8

## Data source support information

As part of your configuration planning, you should ensure that the devices in your environment can be monitored by Insight. To do so, you can check the Data source support matrix for details about operating systems, specific devices, and protocols. Some data sources might not be available on all operating systems.

To access the data source support matrix from the Insight web UI, click the **Help** icon on the toolbar and then click the **Data source support matrix** option.

## Adding data sources

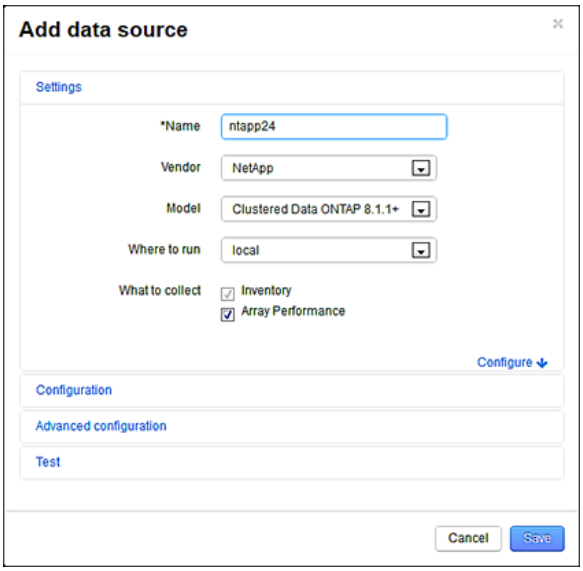
You can add data sources quickly, using the Add data source dialog box.

### Steps

1. Open OnCommand Insight in your browser.
2. If the Data sources table is not displayed, click the **Admin** icon on the toolbar to open it.

3. Click the **Actions** button and select the **Add data source** option.

   The Add data source dialog box is displayed.




4. Enter your network **Name** for the new data source, as shown in this example.
5. In the **Add data source** dialog box, select the **Vendor** and **Model** of the data source from the drop-down lists.
6. Select any **What to collect** additional options.

   These selections change the available fields in the Configuration and Advanced configuration sections.

   In this example, these options are Inventory and Array Performance. Inventory is always selected and cannot be changed. Other possible data collection options are Switch Performance, VM Performance, and Replication (for data synchronization).

7. Click the **Configuration** link and enter the basic setup information required for the data source with your selected data collection type.

   If this is all of the information needed for the data source, you might click the **Test** link at this point.

8. If this type of data source usually requires more detailed information to set it up in your network, click the **Advanced configuration** link to enter additional information.

   If you do not have the information required for the advanced configuration, see the "Vendor-specific data source reference" information for that data source.

9. Click the **Test** link to be certain that the data source is properly configured.
10. Click **Save**.

# Insight data source management

Data sources are the most critical component used to maintain an OnCommand Insight environment. Because they are the primary source of information for Insight, it is imperative that you maintain data sources in a running state.

You can monitor the data sources in your network by selecting a data source to check the events related to its status and noting any changes that might have caused problems.

In addition to examining an individual data source, you can perform these operations:

- Clone a data source to create many similar data sources in Insight
- Edit data source information
- Change credentials
- Control polling
- Delete the data source
- Install data source patches
- Install a new data source from a patch
- Prepare an error report for NetApp Customer Support

## Cloning a data source

Using the clone facility, you can quickly add a data source that has the same credentials and attributes as another data source. Cloning allows you to easily configure multiple instances of the same device type.

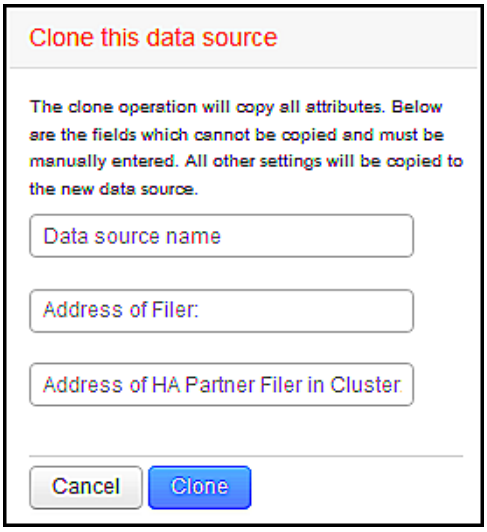
### Steps

1. Click the **Admin** icon on the toolbar.

   The Data sources list opens.

2. Highlight the data source that has the setup information you want to use for your new data source.
3. To the right of the highlighted data source, click the **Clone** icon.

   The Clone this data source dialog box lists the information you must supply for the selected data source, as shown in this example for a NetApp data source:




4. Enter the required information in the fields; those details cannot be copied from the existing data source.
5. Click **Clone**.

### Result

The clone operation copies all other attributes and settings to create the new data source.

## Changing data source credentials

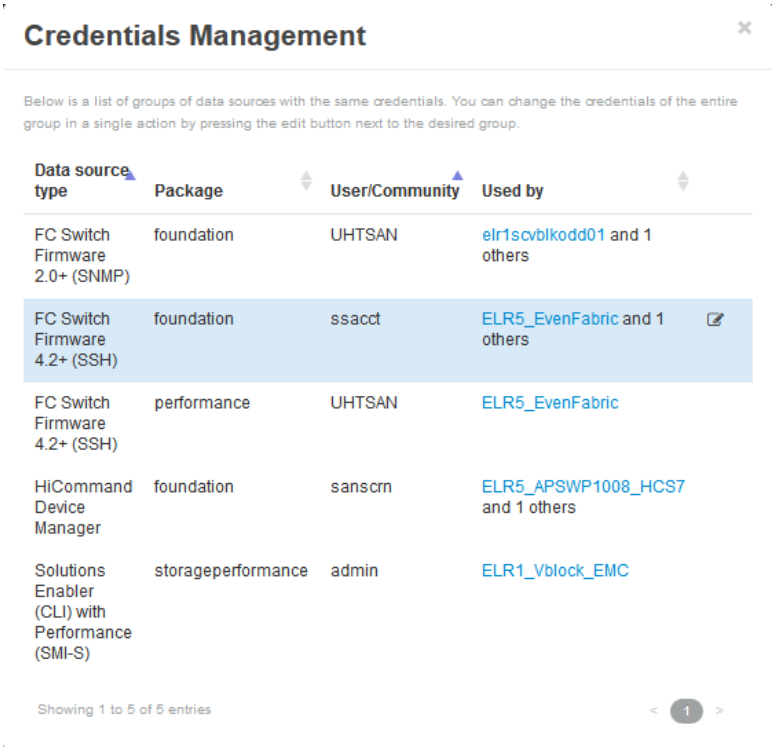
If multiple data sources of the same type are sharing a username and password, you can change the password for all devices in the group at the same time.

### Steps

1. On the Insight toolbar, click the **Admin** icon.

   The **Data sources** list opens.
2. Click the **Actions** button and select the **Change credentials** option.
3. In the Credentials Management dialog box, select one of the data source groups from the list.

   The Edit icon, a pen on a sheet of paper, becomes active to the right.




4. Click **Edit**.
5. Enter the new password and confirm it.

# Examining one data source in detail

If you see that a data source has failed or slowed, you might want to examine a detailed summary of information for that data source to determine the cause of the problem. Data sources with conditions requiring your attention are marked with a solid red circle.

### Steps

1. On the Insight toolbar, click the **Admin** icon.

   The **Data sources** list opens. Any listed data sources with potential problems are marked with a solid red circle. The most serious problems are at the top of the list.
2. Select the data source that is causing concern.
3. Click the data source name link.
4. On the data source summary page, check the information in any of these sections:

   - **Event timeline**
     Lists events tied to the current status shown in the Data sources list. Events in this summary are displayed per device. Errors are shown in red. You can position your mouse pointer on timeline items to display additional information.
   - **Devices reported by this data source**
     Lists the types of devices, their IP addresses, and links to more detailed information for each device.
   - **Changes reported by this data source (last 3 weeks)**

Lists any devices that were added or removed or had a change to the configuration.

5. After examining the data source information, you might want to perform one of these operations using the buttons at the top of the page:
   - **Edit** the description of the data source to correct the problem.
   - **Poll again** forces polling to reveal if the problem was persistent or intermittent.
   - **Postpone** data source polling for 1, 3, or 5 days to give you time to research the problem and stop the warning messages.
   - **Install a patch** on the data source to correct the problem.
   - Prepare an **Error report** for technical support.
   - **Delete** the data source from your Insight monitoring environment.

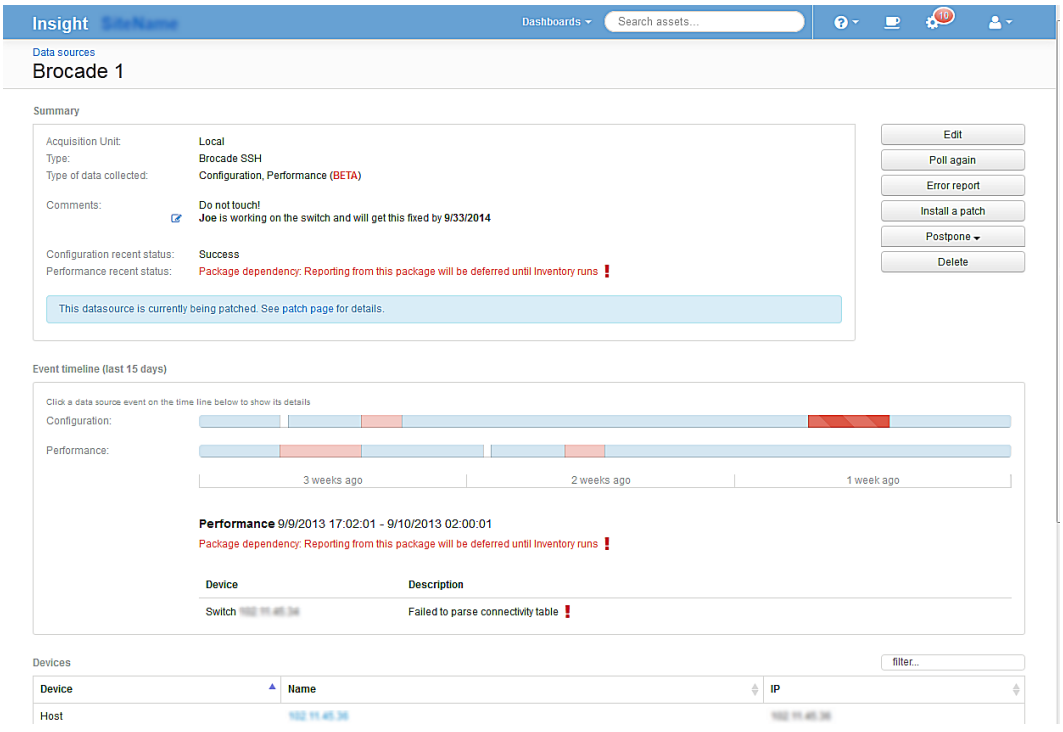
# Researching a failed data source

If a data source has the "**Inventory failed !**" or "**Performance failed !**" message and a High or Medium Impact, you need to research this problem using the data source summary page with its linked information.

### Steps

1. Click the linked **Name** of the data source to open the Summary page.

   This example shows a wide variety of information that might be provided for a failed data source.




2. Check the **Comments** area to read any notes left by another engineer who might also be investigating this failure.
3. Note any performance messages.

4. If there is a patch being applied to this data source, click link to check the **patch page** to see if that has caused the problem.
5. Move your mouse pointer over the segments of the **Event timeline** graph to display additional information.
6. Select an error message for a Device and displayed below the Event timeline and click the **Error details** icon that displays to the right of the message.

   The Error details include the text of the error message, most likely causes, information in use, and suggestions of what can be tried to correct the problem.
7. In the Devices reported by this data source area, you might filter the list to display only devices of interest, and you can click the linked **Name** of a device to display the *asset page* for that device.
8. To return to previously displayed pages, use one of these techniques:
   - Click the browser back arrow.
   - Right-click the back arrow to display a list of the pages and select the page you want.
9. To display detailed information about other resources, click other linked names.
10. When you return to the data source summary page, check the **Changes** area at the bottom of the page to see if recent changes caused the problem.

#### Related tasks

*Searching your environment for specific assets* on page 25

## Changes causing data collection problems

If you are experiencing data collection problems in OnCommand Insight, changes in your environment are a likely cause. As a general maintenance rule, you should accommodate any changes in your environment in Insight as well.

You can use this checklist to identify changes to your network that might be causing problems:

- Have you changed any passwords? Were those passwords changed in Insight?
- Did you remove a device from your network? You must also remove the device from OnCommand Insight to prevent it from being rediscovered and reintroduced.
- Did you upgrade infrastructure software (such as HP CommandView EVA or EMC Solutions Enabler)?

  Ensure that the appropriate versions of the client tools are installed on the acquisition unit. If data source failures persist, you need to contact technical supportto request assistance and possibly a data source patch.
- Are all of your OnCommand Insight acquisition units using the same OnCommand Insight version? If the Remote Acquisition Units and local acquisition unit are running different OnCommand Insight versions, install the same version on all units to correct the data collection problem.

  If you need to install a new version of OnCommand Insight on all of the acquisition units, go to the support site and download the correct version.
- Have you changed any domain names or added a new domain? You must reconfigure the Auto Resolution (AR) methods in the Java UI.

### Related concepts

*What data source patches are* on page 19

### Related tasks

*Restoring the Insight database* on page 22
*Deleting a data source* on page 19

## What data source patches are

Data source patches fix issues with existing patches and also enable you to easily add new data source types (vendors and models). For each data source type in your network, you can upload data source patches. You can also install, test, and manage the patching process. However, only one patch can be active for a data source type at a time.

For each patch, you can perform these tasks:

- Check the before and after comparison of each data source receiving the patch.
- Write comments to explain decisions or summarize research.
- Make changes to a data source that is not responding well to the patch.
- Approve the patch to be committed to your Insight server.
- Roll back a patch that is not operating as you intended.
- Replace a failing patch with a different one.

## Deleting a data source

If you have removed a data source from your environment, you must also delete it from the OnCommand Insight monitoring environment.

### Steps

1. On the Insight toolbar, click the **Admin** icon.

   The Data sources list opens.

2. Select the data source that you want to delete.
3. Click the linked data source name.
4. Check the information for the selected data source on the summary page to be certain that it is the one you want to delete.
5. Click **Delete**.
6. Click **OK** to confirm the operation.

# Managing Insight

OnCommand Insight monitors your environment, enabling you to research potential problems before a crisis is reported. The Assets Dashboard provides summary pie charts, heat maps for IOPs, and an interactive chart of the top 10 utilized storage pools.

### Steps

1. Open the Insight **Assets Dashboard** and move your cursor over the pie charts to examine the asset distribution in these three charts:
   - Capacity by Vendor
   - Capacity by Tier
   - Switch Ports
2. View **Facts About Your Environment** to see information about your environment's used capacity, the capacity's efficiency, consumed FC resources, and virtual infrastructure statistics.
3. Position your cursor over a storage pool bar in the **Top 10 Utilized Pools** chart to view the used and unused capacity of the storage pool.
4. Click any asset name appearing in large text (which indicates that the asset has issues) in the **Storage IOP** heat map to display a page summarizing the current state of that asset.
5. In the lower right corner of the **Assets Dashboard**, click any asset name appearing in large text (which indicates the asset has issues) in the **Virtual Machine IOPS** heat map to display a page summarizing the current state of the asset.
6. On the toolbar, click **Admin** .
7. Find administration buttons with similar circled numbers and examine the details displayed in those areas.

   If the Admin icon has a circled number, as shown in Step 6, the number indicates the number of possible problems detected. In the Admin area, potential problems are marked with a solid red circle in the web UI.
8. Click **Data Sources** to examine a list of all monitored data sources.

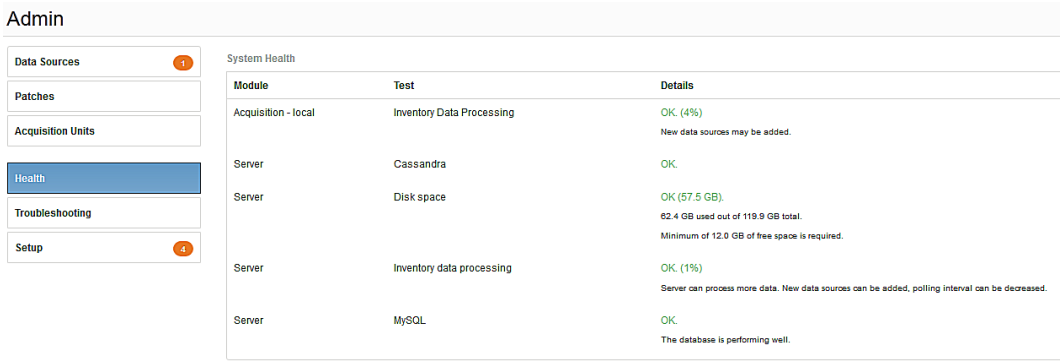
   Examine any data source with a **Status** column containing a message with a solid red circle and with an **Impact** listed as High or Medium. These are at the top of the table. The problems with those data sources affect a significant portion of your network, which you need to address.
9. Click **Acquisition Units** to note the status for each IP address running Insight and to restart an acquisition unit, if necessary
10. Click **Health** to see high-level instance monitoring of the Insight servers.

### Related tasks

*Searching your environment for specific assets* on page 25
*Examining one data source in detail* on page 16

# Monitoring Insight system health

To check the current status of your Insight system, open the Health summary page in the Admin selections. The summary lists the current status of all of your Insight servers and the acquisition units.



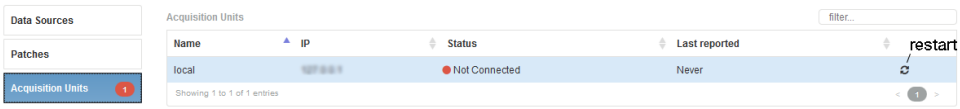

## Acquisition unit status

The status of the Insight acquisition units connected to your server is displayed in the **Admin > Acquisition Units** table. If a unit in the list has a solid red circle in the description, that unit has a serious problem that you must investigate. You can select an entry in this table and restart that acquisition unit.

The Acquisition Units table displays this information for each unit:

- **Name**
- **IP**
- **Status** is the operating status of the acquisition unit.
- **Last reported** displays last time a data source connected to the acquisition unit reported.

If you position your pointer over one of the units in the table, you can click the square icon to restart that unit.




# Updating expired licenses

If one or more of your Insight licenses expired, you can update the licenses quickly using the same procedure as you did to install the licenses originally.

### Steps

1. In a text editor, such as Notepad, open the new license file you received from NetApp Support and copy the license key text to your Windows Clipboard.
2. Open OnCommand Insight in your browser.

3. Click the **Admin** icon on the toolbar.
4. Click **Setup**.
5. Click the **Licenses** tab.
6. Click **Update License**.
7. Copy the license key text into the **License** text box.
8. Select the **Update (most common)** operation.

   This operation adds your new licenses to any currently active Insight licenses.
9. Click **Save**.

# Restoring the Insight database

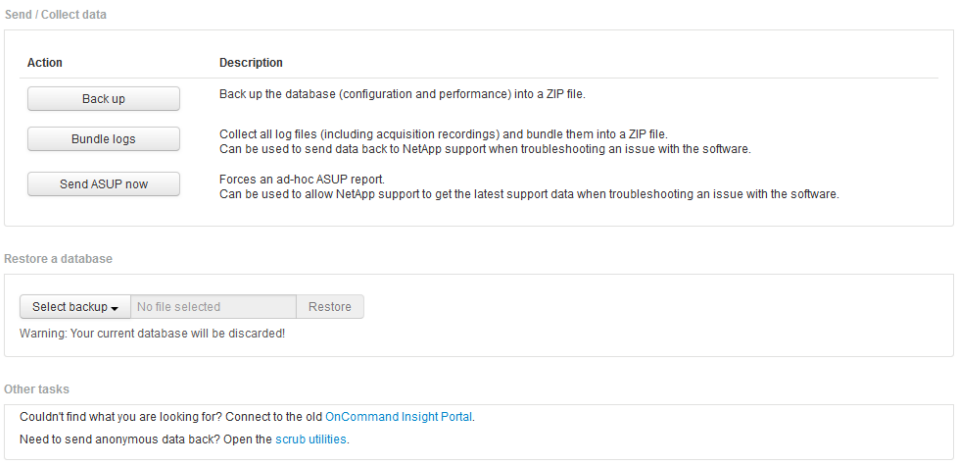
To restore your Insight database from a verified backup file, use the Troubleshooting options. This operation completely replaces your current OnCommand Insight data.

### Before you begin

**Best practice:** Before restoring your OnCommand Insight database, use the manual backup process to create a copy of the current database. Check the backup file you plan to restore be certain that it was a successful backup containing the files you want to restore.

### Steps

1. On the Insight toolbar, click the **Admin** icon.
2. Click **Troubleshooting**.




3. In the Restore a database section, select the backup file you want to restore from the **Select Backup** menu.
4. Click **Restore**.

# Upgrading Insight Server software

You can check for OnCommand Insight server updates after you log into the server.

### Steps

1. On the Insight toolbar, click the **Help** icon.
2. Select **Check for updates**.
3. Click **OK** if the `Version is up to date` message displays.
4. If a newer update is detected, click the **download here** link in the message box.
5. In the **Download** page, click **download**.
6. Complete the upgrade.

# Monitoring your environment

Insight helps you to prevent problems in your environment and troubleshoot potential problems quickly.

## Asset page data

Asset pages provide performance troubleshooting data and present summary information about a base asset (such as a virtual machine or a volume) and the related assets it uses (such as storage pools, storage nodes, and connected switch ports), with links to additional information.

An asset page displays several sections containing information relevant to the asset. Depending on the type of asset, you see different sections. Any message with a solid red circle next to it on an asset page indicates potential issues with the monitored environment.

### Types of asset pages

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

OnCommand Insight provides asset pages for the following assets:

- Virtual machine
- Volume
- Internal volume
- Physical host
- Storage pool
- Storage
- Datastore
- Hypervisor
- Application
- Storage node
- Disk
- VMDK
- Port
- Switch
- Fabric
- Object store (Atmos, Centera, and Amazon S3)

**Note:** Summary information is available for Atmos, Centera, and Amazon S3 object store assets; however, you can only access this information from the Data sources detail page.

## Searching your environment for specific assets

You can locate information about specific assets by using the search facility. For example, if a system user contacts the storage administrator with a complaint about a particular server, the administrator can search the server name and display an asset page summarizing the status and supplying additional linked information.

### Steps

1. Open the OnCommand Insight web UI.
2. On the toolbar, click .

   The **Search assets** box is displayed.
3. Enter the name of an asset or a portion of the name.
4. Select the resource you want from the search results.

   The asset page for that resource is displayed.

### Advanced search techniques

Multiple search techniques can be used to search for data or objects in your monitored environment.

#### Wildcard search

You can perform multiple character wildcard search using the * character. For example, *applic*n* would return application.

#### Phrases used in search

A phrase is a group of words surrounded by double quotation marks; for example, "PAW VNX LUN 5". You can use double quotes to search for documents that contain spaces in their names or attributes.

#### Boolean Operators

Using Boolean operators, you can combine multiple terms to form a more complex query.

**OR**

- The OR operator is the default conjunction operator.
  If there is no Boolean operator between two terms, the OR operator is used.
- The OR operator links two terms and finds a matching document if either of the terms exists in a document.
  For example, “storage OR netapp” searches for documents that contain either “storage” or “netapp”.
- High scores are given to documents that match most of the terms.

**AND**

You can use the AND operator to find documents in which both the search terms exist in a single document. For example, “aurora AND netapp” searches for documents that contain both “storage” and “netapp”.

You can use the symbol && instead of the word AND.

**NOT**

When you use the NOT operator, all the documents that contain the term after NOT are excluded from the search results. For example, “storage NOT netapp” searches for documents that contains only “storage” and not “netapp”.

You can use the symbol ! instead of the word NOT.

### 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”.
- Search is case-insensitive.

### Search using indexed terms

Searches that match more of the indexed terms result in higher scores.

The search string is split into separate search terms by space. For example, the search string “storage aurora netapp” is split into three keywords: “storage”, “aurora”, and “netapp”. The search is performed using all three terms. The documents that match most of these terms will have the highest score. The more information you provide, the better are the search results. For example, you can search for a storage by its name and mode.

The UI displays the search results across categories, with the three top results per category. If you did not find a document that you were expecting, you can include more terms in the search string to improve the search results.

The following table provides a list of indexed terms that can be added to the search string.

| Category | Indexed terms |
|---|---|
| Storage | • “storage”<br>• name<br>• vendor<br>• model |

| **Category** | **Indexed terms** |
|---|---|
| StoragePool | • “storagepool”<br>• name<br>• name of the storage<br>• IP addresses of the storage<br>• serial number of the storage<br>• storage vendor<br>• storage model<br>• names for all associated internal volumes<br>• names for all associated disks |
| Internal Volume | • “internalvolume”<br>• name<br>• name of the storage<br>• IP addresses of the storage<br>• serial number of the storage<br>• storage vendor<br>• storage model<br>• name of the storage pool<br>• names of all associated shares<br>• names of all associated applications and business entities |
| Volume | • “volume”<br>• name<br>• label<br>• names of all internal volumes<br>• name of the storage pool<br>• name of the storage<br>• IP addresses of the storage<br>• serial number of the storage<br>• storage vendor<br>• storage model |

| Category | Indexed terms |
|---|---|
| Storage Node | • “storagenode”<br>• name<br>• name of the storage<br>• IP addresses of the storage<br>• serialnumber of the storage<br>• storage vendor<br>• storage model |
| Host | • “host”<br>• name<br>• IP addresses<br>• names of all associated applications and business entities |
| Datastore | • “datastore”<br>• name<br>• virtual center IP<br>• names of all volumes<br>• names of all internal volumes |
| Virtual Machines | • “virtualmachine”<br>• name<br>• DNS name<br>• IP addresses<br>• name of the host<br>• IP addresses of the host<br>• names of all datastores<br>• names of all associated applications and business entities |

| **Category** | **Indexed terms** |
|---|---|
| Switches (regular and NPV) | • “switch”<br>• IP address<br>• wwn<br>• name<br>• serial number<br>• model<br>• domain ID<br>• name of the fabric<br>• wwn of the fabric |
| Application | • “application”<br>• name<br>• tenant<br>• line of business<br>• business unit<br>• project |
| Tape | • “tape”<br>• IP address<br>• name<br>• serial number<br>• vendor |
| Port | • “port”<br>• wwn<br>• name |
| Fabric | • “fabric”<br>• wwn<br>• name |

## 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 or a custom range of time to view less or more data.

### About this task

You can change the time segment of displayed data by using an option that is located on every asset page, regardless of asset type.

### Steps

1. Log in to the OnCommand Insight web UI.
2. Locate an asset page by doing either of the following:
   - On the Insight toolbar, click , type in the name of the asset, and then select the asset from the list.
   - Click **Dashboards**, select **Assets Dashboard**, locate an asset name, and click it.

   The asset page displays.
3. In the upper left corner of the page, click any of the following time icons to change the segment of data displayed:
   - **3h**
     Displays the last three hours of data.
   - **24h**
     Displays the last 24 hours of data.
   - **7d**
     Displays the last seven days of data.
   - **Custom**
     Displays a dialog box that enables you to choose a custom range of time.
4. If you chose **Custom**, do the following:
   a. Click the date field, and select a month, day, and year for the begin date.
   b. Click the time list, and select a begin time.
   c. Repeat both steps a and b for the end data and time.
   d. Click .

## Determining data source acquisition status

Because data sources are the primary source of information for Insight, it is imperative that you ensure that they remain in a running state.

The ability to see the data source acquisition status is available on every asset page for all assets that are directly acquired. Either of the following acquisition scenarios can occur, in which the status is displayed in the upper right corner of the asset page:

- Acquired successfully from data source
  Displays the status “Acquired *xxxx*”, where *xxxx* indicates the most recent acquisition time of the asset's data sources.

- There is an acquisition error.
  Displays the status “Acquired *xxxx*”, where *xxxx* indicates the most recent acquisition time of the asset's one or more data sources with ⚠. When you click ⚠, a window displays each data source for the asset, the data source's status, and the last time data was acquired. Clicking a data source displays the data source's detail page.

If an asset is not directly acquired, no status is displayed.

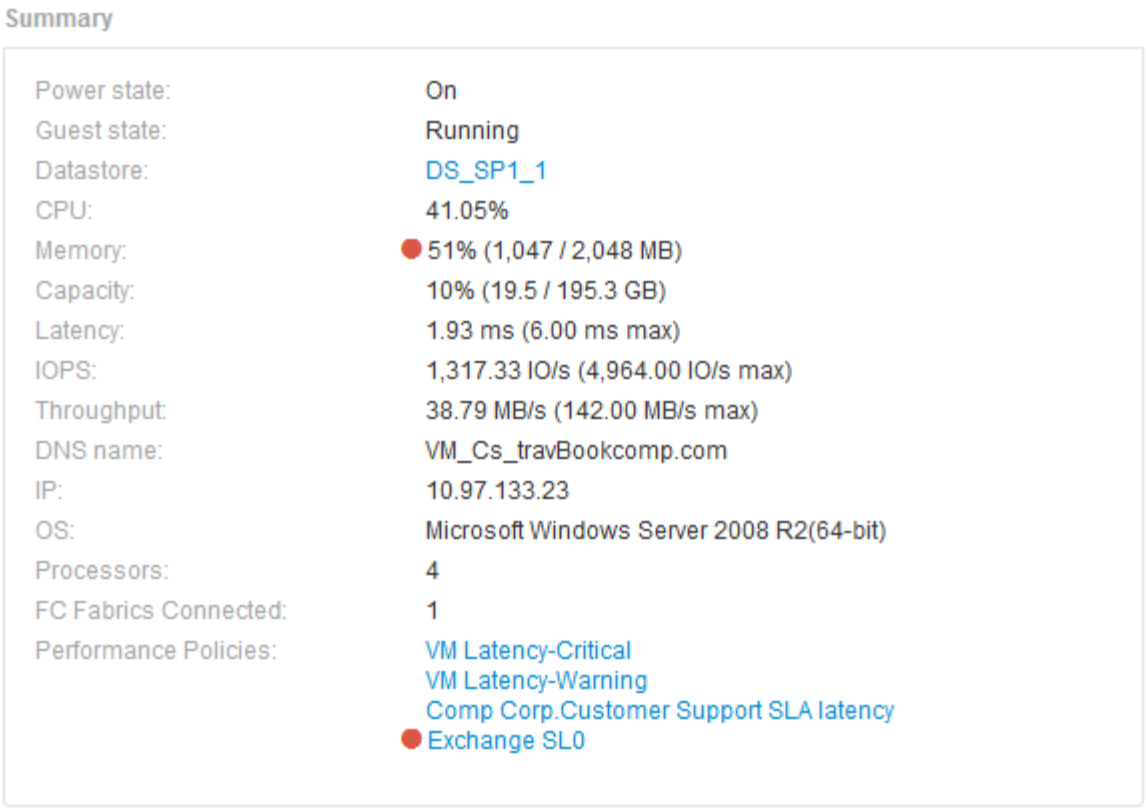
## Asset page sections

An asset page displays several sections containing information relevant to the asset. The sections that you see depend on the type of asset.

### Summary

The Summary section on an asset page displays a summary of information about the particular asset and shows issues related to the asset, indicated by a red circle, with hyperlinks to additional information about related assets and to any performance policies assigned to the asset.

The following example shows some of the types of information available in the Summary section of an asset page for a virtual machine. Any item with a solid red circle next to it indicates potential issues with the monitored environment.




#### Related tasks

*Using the Summary section* on page 32

## Using the Summary section

You can view the Summary section to see general information about an asset. Specifically, it is helpful to see if any metrics (for example, memory, capacity, and latency) or any performance policies are cause for concern, which OnCommand Insight indicates by displaying a red circle next to the metric or performance policy.

### Steps

1. Log in to the OnCommand Insight web UI.
2. Locate an asset page by doing either of the following:
   - On the Insight toolbar, click , type in the name of the asset, and then select the asset from the list.
   - Click **Dashboards**, select **Assets Dashboard**, locate an asset name, and click it.

   The asset page displays.

   **Note:** The information that displays in the Summary section depends on the type of asset page you are viewing.
3. 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 or click to view the asset page of the HA partner.
4. You can view the metrics associated with the asset.

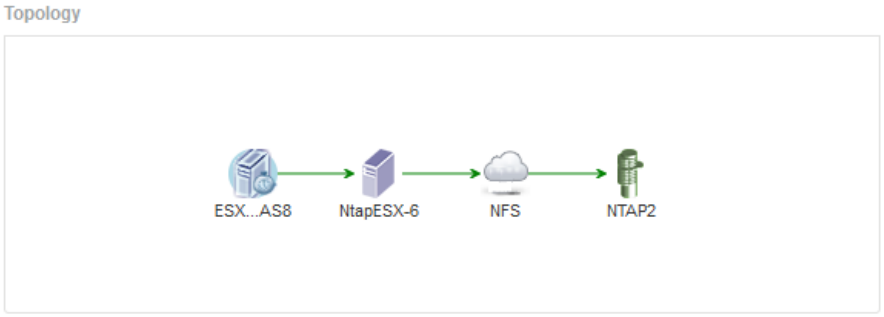
   A red circle next to a metric indicates that you might need to diagnose and resolve potential problems.
5. If applicable, you can click a performance policy link to view the performance policy or policies associated with the asset.

   If a red circle appears next to a performance policy, this indicates an asset has crossed the performance policy's defined threshold. You should examine the performance policy to further diagnose the issue.

## Topology

The Topology section, if application to an asset, enables you to see how a base asset is connected to its related assets.

The following shows an example of what might display in the Topology section of a virtual machine asset page.




If the topology for the asset is larger than will fit in the section, the **Click link to see the topology** hyperlink is displayed instead.

#### Related tasks

*Using the Topology section* on page 33

## Using the Topology section

The Topology section enables you to view how the assets in your network are connected to each other and display information about related assets.

#### Steps

1. Log in to the OnCommand Insight web UI.
2. Locate an asset page by doing either of the following:

   - On the Insight toolbar, click , type in the name of the asset, and then select the asset from the list.
   - Click **Dashboards**, select **Assets Dashboard**, locate an asset name, and click it.

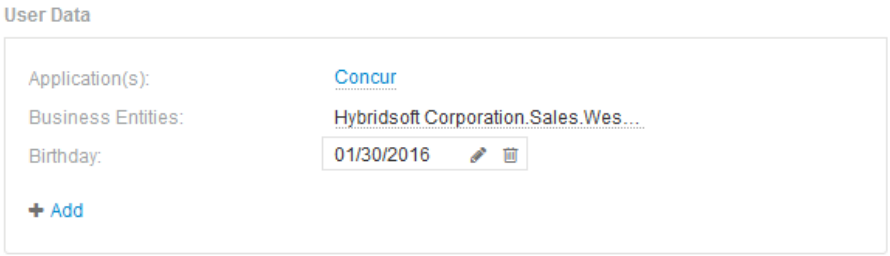
   The asset page displays. You can find the Topology section in the upper right-hand corner of the asset page.

   If the topology for the asset is larger than will fit in the section, click the **Click link to see the topology** hyperlink.
3. To view more information about the base asset's related assets, position your cursor over a related asset in the topology and click its name, which displays its asset page.

## User Data

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

The following shows an example of what might display in the User Data section of a virtual machine asset page when an application, business entity, and annotation are assigned to the asset:




#### Related tasks

*Using the User Data section to assign or modify annotations* on page 34

## 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, and hypervisors). The User Data section enables you to change the application assigned to an asset or assign an application or additional applications to an asset.

#### Steps

1. Log in to the OnCommand Insight web UI.
2. Locate an asset page by doing either of the following:

- On the Insight toolbar, click , type in the name of the asset, and then select the asset from the list.
- Click **Dashboards**, select **Assets Dashboard**, locate an asset name, and click it.

The asset page displays.

3. You can do the following:
   - To view the asset page for the application, click the application's name.
   - To change the application assigned or to assign an application or additional applications, position your cursor over the application name, if an application is assigned, or over **None**, if no application is assigned, click , type to search for an application or select one from the list, and then click .
     If you choose an application that is associated with a business entity, the business entity is automatically assigned to the asset. In this case, when you place your cursor over the business entity name, the word *derived* displays. If you want to maintain the entity for only the asset and not the associated application, you can manually override the assignment of the application.
   - To remove an application, click .

## Using the User Data section to assign or modify business entities

You can define business entities to track and report on your environment data at a more granular level. The User Data section in an asset page enables you to change the business entity assigned to an asset or remove a business entity from an asset.

### Steps

1. Log in to the OnCommand Insight web UI.
2. Locate an asset page by doing either of the following:
   - On the Insight toolbar, click , type in the name of the asset, and then select the asset from the list.
   - Click **Dashboards**, select **Assets Dashboard**, locate an asset name, and click it.

   The asset page displays.
3. You can do the following:
   - To change the entity assigned or to assign an entity, click and select an entity from the list.
   - To remove a business entity, click .

     **Note:** You cannot remove an entity that is derived from an application that is assigned to the asset.

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

When customizing OnCommand Insight 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. Log in to the OnCommand Insight web UI.
2. Locate an asset page by doing either of the following:
   - On the Insight toolbar, click , type in the name of the asset, and then select the asset from the list.
   - Click **Dashboards**, select **Assets Dashboard**, locate an asset name, and click it.

   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**.

   The annotation is assigned to the asset. You can later filter assets by annotation using a query. If you want to group assets by annotations, you must use the Java UI. Refer to the *OnCommand Insight Inventory User Guide for the Java UI* for more information.
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.

## Anomalies

The Anomalies section, which displays only on an application asset page when the anomaly detection engine is installed, enables you to identify the normal operating workload range for an application and identify when changes in performance are outside of expected levels.

Anomaly analysis provides proactive visibility into the infrastructure supporting business critical applications and informs you of performance anomalies before they become service disruptions. The application anomaly detection engine ingests performance metrics collected by Insight and identifies anomalies in the application infrastructure. Anomalies are items, events or observations that do not conform to an expected pattern or other items. You use anomaly detection to:

- Monitor selected critical applications.
- Identify significant changes in the application infrastructure behavior.
- Track an application through the entire stack and across multiple counters.
- Diagnose the cause of periodically recurring events in an application workload.
- Provide a more comprehensive set of information compared to data from performance counters using static threshold values.

- Improved reactive mode monitoring with end to end view of the topology and the ability to focus on the most anomalous behaviors in a data set.

#### Related tasks

*Using the Anomalies section* on page 36

## Using the Anomalies section

The Anomalies section, which displays only on an application asset page, enables you to turn on anomaly detection. Anomaly detection provides insight into the application infrastructure and enables you to identify abnormal behaviors that could result in service disruptions.

#### Before you begin

- You must have the Perform license configured to install the anomaly detection engine.
- You must have installed and configured the anomaly detection engine.
  For more information about installing and configuring the anomaly detection engine, see the *OnCommand Insight Configuration and Administration Guide*.
- You must have assigned an application to the compute resource (virtual machine or host) for any assets for which you want anomaly detection information.
  Insight discovers the rest of the resources automatically.
  For more information about assigning applications to assets, see the *OnCommand Insight Configuration and Administration Guide*.

#### Steps

1. Log in to the OnCommand Insight web UI.
2. Click **Manage** and select **Applications**.
3. Locate the application assigned to the computer resource.
4. In the **Anomalies** section, ensure that the **Monitor** control box in the upper right of the section shows **ON** rather than **OFF**; if not, click anywhere in the **Monitor** control box to switch the control to **ON**.

   You are able to concurrently monitor up to 48 applications for anomalies.

   The status in the section displays “Collecting data” for at least an hour; the anomaly detection engine preloads up to 14 days of any existing performance data so the engine can learn the behavior of your environment. After the Insight server performs the first poll of your environment's assets, the anomaly detection engine calculates and returns a score for the application within that time.
5. While the anomaly detection engine is running, you can view the following information in the **Anomalies** section of the application asset page:

   - Anomaly detection score
     The score (for example, 50) that displays is the highest anomaly score in the bucket of time (for example, 1:30 am - 1:59 am) in the time period (for example, either 3 hours, 24 hours, 3 days, 7 days, or a custom time period) that is selected on the application's asset page.
     A score of 0-50 indicates mild anomalous behavior raising awareness to new factors affecting the infrastructure performance, a score of 51-75 indicates some anomalous behavior worth further investigation, and a score of 76-100 could indicate a significant change in the application infrastructure behavior.
   - Application assets view
     Located below the anomaly detection score, this shows how all the assets contribute to the current anomaly score. If an asset is not contributing significantly to the anomaly score, it is

represented by . If the asset is contributing to the significance of the anomaly score, either 1, 2, or three blue bars appear, for example, .
Both assets that are assigned to an application (hosts, virtual machines, volumes, internal volumes, and hypervisors) and also assets in the infrastructure that are somehow connected to the assigned assets (for example, nodes, ports, and so on). Both assets that contribute and those that do not contribute to the specific anomaly are displayed, because the data from the assigned application resources may flow through them.
If there are more than 60 assets of one type, the **More** button displays, which you can click to display the remaining assets. That status of those remaining assets, for example, 124 4 1, appears next to the **More** button. This example indicates that of a total of 129 assets not shown, 124 of those assets did not contribute to the anomaly score; however, five of those assets did contribute some level of significance to the anomaly score.

- Anomaly graph
  The anomaly graph displays the highest anomaly score, indicated by the orange circle, for the time range (3 hours, 24 hours, 3 days, 7 days, or a custom time range) selected for the application asset page. You can drag your pointer over the chart to see the anomaly scores, indicated by a blue circle, for other points during the time range and then click the blue circle, which will update the application assets view to display the assets that contributed to the score at that point in time.

6. To aid you in troubleshooting asset performance, you can add an asset from the application assets view to the expert view chart in the application asset page by doing the following:

   a. Click an asset icon in the applications assets view.

      The following displays: The name of the asset, which is a hyperlink to its asset page, the metric that contributed to the anomaly, the significance of the asset's contribution, and a button that enables you to add the asset to the expert view chart.

   b. Click .

   The asset is added to the expert view chart.

## 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 (3 hours, 24 hours, 3 days, 7 days, or a custom time period) in the performance chart and any assets related to it.

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

You can select the metrics you want to view in the performance chart for the time period selected.

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.
- Greedy
  Shows the assets that take away system resources from the asset through sharing the same resources, such as hosts, networks, and storage.
- Degraded
  Shows the assets that are depleted of system resources due to this asset.

#### Related tasks

*Using the Expert View section* on page 40

### Expert View metric definitions

The Expert View section of an asset page can display a number of 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.

| Metric | Description |
|---|---|
| Zero BB Credit Rx | Number of times the receive buffer-to-buffer credit count transitioned to zero during the sampling period. It represents the number of times the attached port had to stop transmitting because this port was out of credits to provide. |
| Zero BB Credit Tx | Number of times the transmit buffer-to-buffer credit count transitioned to zero during the sampling period. It represents the number of times this port had to stop transmitting because the attached port was out of credits to provide. |
| BB credit zero duration Tx | Time in milliseconds during which Tx BB credit was zero during the sample interval |
| Cache hit ratio (Total, Read, Write) % | Cache Hit Ratio - Percentage of requests that result in cache hits. The higher the number of hits versus accesses to the volume, the better the performance. This column is empty for storage arrays that do not collect cache hit information.<br>Cache Hit Ratio (R&W) - Percentage of Read/Write requests that result in cache hits. The higher the number of hits versus accesses to the volume, the better the performance. This column is empty for storage arrays that do not collect cache hit information. |
| Cache reads replaced | |
| Cache utilization (Total) % | |
| Class 3 Discards | The count of Fibre Channel Class 3 data transport discards |

| Metric | Description |
|---|---|
| CPU utilization (Total) % | Threshold for the host's CPU MHz being used. The default values are Low 45 and High 75.<br>Amount of actively used CPU, as a percentage of total available (over all virtual CPUs). |
| CRC Error | Number of frames with invalid CRCs detected by this port during the sample period |
| Frame rate | Tx frame rate in fps |
| Frame size average - Rx and Frame size average - Tx | This represents the ratio of traffic to frame size and enables you to identify if there are any overhead frames in the fabric. If this metric goes below a certain value (usually 0.2), there is an issue. |
| Frame Size Too Long | The count of Fibre Channel data transmission frames that are too long. |
| Frame Size Too Short | The count of Fibre Channel data transmission frames that are too short. |
| IO density (Total, Read, Write) IO/s/TB | |
| IOPS (Total, Read, Write) I/O sec | The number of Read or Write I/O service requests passing through the I/O channel or portion of that channel per unit of time (measured in I/O per sec). This is Read/Write. |
| IP throughput (Total, Read, Write) MB/sec | Aggregated rate at which IP data was transmitted and received in megabytes per second.<br>IP Throughput (Receive) Average rate at which IP data was received in megabytes per second.<br>IP Throughput (Transmit) Average rate at which IP data was transmitted in megabytes per second. |
| Latency (Total, Read, Write) milliseconds | Latency (R&W)<br>The rate at which data is read or written to the virtual machines in a fixed amount of time.<br>The value is measured in megabytes per second.<br>Latency<br>The average response time from the virtual machines carved from a data store.<br>Top Latency<br>The highest response time from the virtual machines carved from a data store. |
| Link failure | Number of link failures detected by this port during the sample period. |
| Link Reset Rx | Number of receive link resets during the sample period. Represents the number of link resets issued by the attached port to this port. |
| Link Reset Tx | Number of transmit link resets during the sample period. Represents the number of link resets issued by this port to the attached port. |
| Memory utilization (Total) % | Threshold for the memory used by the host. |

| Metric | Description |
|---|---|
| Partial R/W (Total) % | Total number of times that a read or write crosses a stripe boundary on any disk module in 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 only, this value is the number of stripe crossings divided by the total number of IOPS. |
| Port errors | Has FC Port Errors<br>Indicates if there were any port errors over the given time span. |
| Signal loss count | Number of signal loss errors. If a Loss of Signal error occurs, there is no electrical connection and a physical problem exists. |
| Swap rate (Total Rate, In rate, Out rate) KB/sec | |
| Sync loss count | Number of synchronization loss errors. If a Loss of Sync error occurs, the hardware cannot make sense of the traffic or lock onto it. All of the equipment might not be using the same data rate or the optics or physical connections might be of poor quality. The port must resync after each such error, which impacts system performance. |
| Throughput (Total, Read, Write) MB/sec | Rate that data is being transmitted in a fixed amount of time in response to I/O service requests (measured in MB per sec).<br>Throughput (R&W) - Rate at which Read or Write data is being received in a fixed amount of time in response to I/O service requests (measured in MB per sec). |
| Timeout discard frames - Tx | Discarded Tx frames caused by timeout |
| Traffic Rate | |
| Traffic utilization | |
| Utilization (Total) % | Percentage of available bandwidth used for Tx and Rx. Percentage of available bandwidth used for reception (Rx) |
| Utilization (Total, Read, Write) % | Percentage of available bandwidth used for transmission (Tx) and reception (Rx). |
| Write pending (Total) | The 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. Log in to the OnCommand Insight web UI.
2. Locate an asset page by doing either of the following:
   - On the Insight toolbar, click , type in the name of the asset, and then select the asset from the list.

- Click **Dashboards**, select **Assets Dashboard**, locate an asset name, and click it.

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.

3. You can click **Select metrics to show**, and select a metric to add a performance chart for a metric.

   A performance chart is added for the selected metric. 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 left-hand corner of the asset page.

   You can perform the step again, and click to clear a metric. The performance chart for the metric is removed.

4. You can position your cursor over the chart and change the metric data that displays by clicking either of the following, depending on the asset:

   - **Read** or **Write**
   - **Tx** or **Rx**

   **Total** is the default.

5. 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.

6. In the **Resources** section, you can do any of the following, if applicable, to 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.
   - 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 assets 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 .

### Related Assets

If applicable, an asset page displays a Related Assets section. For example, a volume asset page might show information about assets like Storage Pools, Connected switch ports, and Compute Resources. Each section comprises a table that lists any of the related assets in that category, with links to their respective asset pages, and several performance statistics related to the asset.

### Using the Related Assets section

The Related Assets section enables you to view any of the assets that are related to the base asset. Each related asset is displayed in a table along with pertinent statistics for the asset. You can export

the asset information, view the asset statistics in the Expert View performance charts, or show a chart that displays statistics for only related assets.

### Steps

1. Log in to the OnCommand Insight web UI.
2. Locate an asset page by doing either of the following:
   - On the Insight toolbar, click , type in the name of the asset, and then select the asset from the list.
   - Click **Dashboards**, select **Assets Dashboard**, locate an asset name, and click it.

   The asset page displays.
3. To control how assets display in the table:
   - Click the name of any asset to display its asset page.
   - Use the **filter** box to show only specific assets.
   - Click a page number to browse through the assets by page if there are more than five assets in the table.
   - Change the sort order of the columns in a table to either ascending (up arrow) or descending (down arrow) by clicking the arrow in the column header.
   - Add a related asset to any performance chart in the Expert View section by placing your cursor over the related asset and clicking .
4. To export the information displayed in the table to a `.CSV` file:
   a. Click .
   b. Click **Open with** and then **OK** to open the file with Microsoft Excel and save the file to a specific location, or click **Save file** and then **OK** to save the file to your Downloads folder.

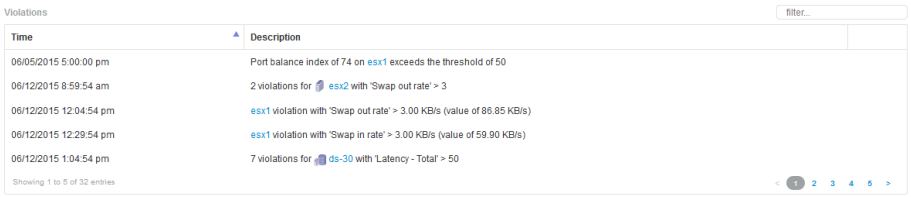
      All of the asset's attributes are exported to the file.
5. To display the related asset information in a chart below the table, click and do any of the following:
   - Click **Read**,**Write**, or **Total** to change the metric data that displays. **Total** is the default.
   - Click to select a different metric.
   - Click to change the chart type. **Line chart** is the default.
   - Move your cursor over the data points in the chart to see how the value of the metric changes over the time period selected for each related asset.
   - Click a related asset in the chart legend to add it to or remove it from the chart.
   - Click a page number in the related asset table to view other related assets in the chart.
   - Click to close the chart.

## Violations

You can use the Violations section of an asset page to see the violations, if any, that occur in your environment as a result of a performance policy assigned to an asset. Performance policies monitor

your network thresholds and enable you to detect a violation of a threshold immediately, 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 Violations section that displays on an asset page for a hypervisor:




### Related tasks

*Using the Violations section* on page 43

## Using the Violations section

The Violations section enables you to view and manage any of the violations that occur in your network as the result of a performance policy assigned to an asset.

### Steps

1. Log in to the OnCommand Insight web UI.
2. Locate an asset page by doing either of the following:
   - On the Insight toolbar, click , type in the name of the asset, and then select the asset from the list.
   - Click **Dashboards**, select **Assets Dashboard**, locate an asset name, and click it.

   The asset page displays. The Violations section displays the time the violation occurred and a description of the threshold that was crossed, along with a hyperlink to the asset on which the violation occurred (for example “2 violations fir ds-30 with Latency - Total > 50”).
3. You can perform any of the following optional tasks:
   - Use the **filter** box to show only specific violations.
   - Click a page number to browse through the violations by page if there are more than five violations in the table.
   - Change the sort order of the columns in a table to either ascending (up arrow) or descending (down arrow) by clicking the arrow in the column header.
   - Click the asset name in any description to display its asset page; a red circle indicates issues that need further investigation.

     You can click the performance policy, which displays the Edit Policy dialog box, to review the performance policy and make changes to the policy if necessary.
   - Click to remove a violation from the list if you determine the issue is no longer a cause for concern.

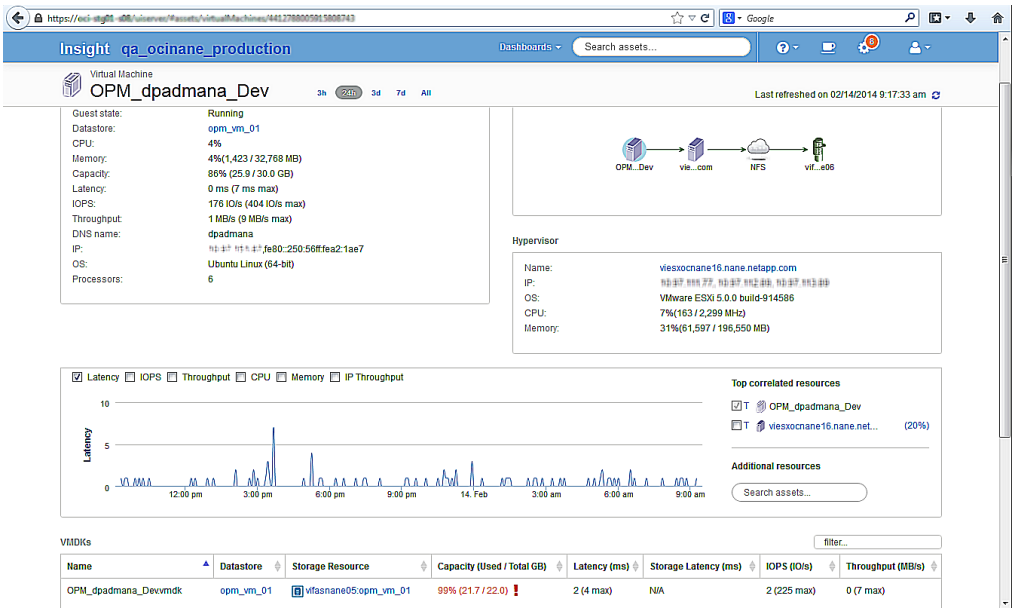
# Balancing network resources

To resolve balancing issues, use the asset pages to find the problems and identify high capacity volumes that are underused.

### Steps

1. Open the Assets Dashboard in your browser.
2. In the Virtual Machines IOPs heat map, you notice the name of a VM in very large print that often reports problems.
3. Click the VM name to display the asset page.
4. Check for error messages in the summary.
5. Check the performance charts and particularly the top correlated resources to locate any volumes that might be in contention.
6. Add volumes to the performance chart to compare the patterns of activity and display more asset pages for other resources involved in the problem.
7. Scroll to the bottom of asset page to see lists of all of the resources associated with the VM.

   In this example, this Virtual Machine asset page shows that it is running well, but at the bottom of the page, one VMDK is at 99% capacity and probably causing the IOPs problem.




8. To resolve the balancing problem, identify a resource that is under-utilized to receive the load from an over-utilized resource or remove a less demanding application from the heavily used resource.

# Examining network performance

You can examine your storage environment performance and identify under-utilized and over-utilized resources and identify risks before they turn into problems.

Insight helps you to resolve or prevent performance and availability problems that are revealed through the collected storage data.

You can use Insight to perform these performance management tasks:

- Monitor performance across your environment
- Identify resources influencing the performance of other devices

## Analyzing slow PC performance

If you receive calls from network users complaining that their computers are running slowly, you need to analyze host performance and identify the affected resources.

### Before you begin

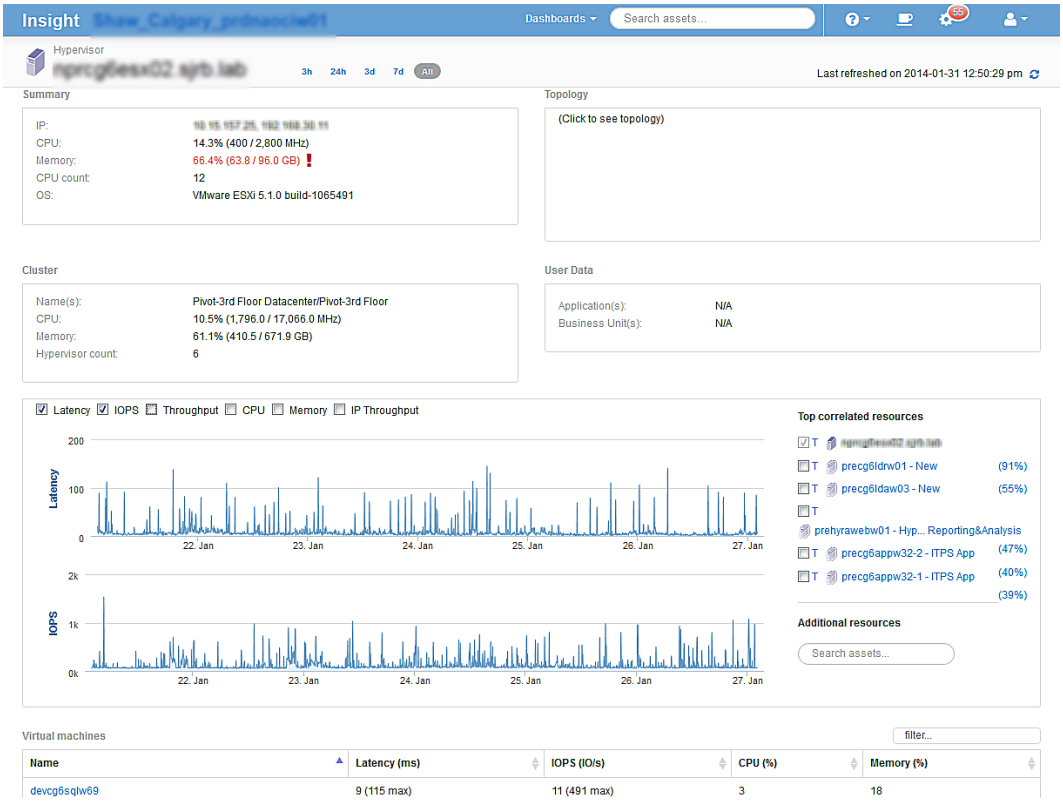
In this example, the caller gave the host name.

### Steps

1. Open Insight in your browser.
2. Enter the host name in the **Search assets** box and click the host name in the search results.

   The *asset page* for the resource opens.
3. On the asset page for the host, examine the performance charts in the center of the page. You might want to show different types of data in addition to the Latency and IOPS that are usually pre-selected. Click the check boxes for other types of data, such as Throughput, Memory, CPU, or IP Throughput depending on the device type.

   In this example, the resource has high latency over several days.




4. To display a description of a point on a chart, position the mouse pointer over the point, as shown in this example.
5. You might also want to change the time range with the selection at the top of the page to be 3 hours up to 7 days or All of the available data.
6. Examine the list of **Top correlated resources** to see if there are other resources with the same pattern of activity as the base resource.

   The first resource in the list is always the base resource.

   a. Click a linked percentage beside a correlated resource to see if the correlated activity pattern is for IOPs or CPU for the base resource and another resource.

   b. Click the check box for a correlated resource to add its data to the performance charts.

   c. Click the linked name of the correlated resource to display its asset page.
7. For a VM, as in this example, locate the storage pool in the **Top correlated resources** and click the storage pool name.

### Related tasks

*Examining one data source in detail* on page 16

## Analyzing correlated resources

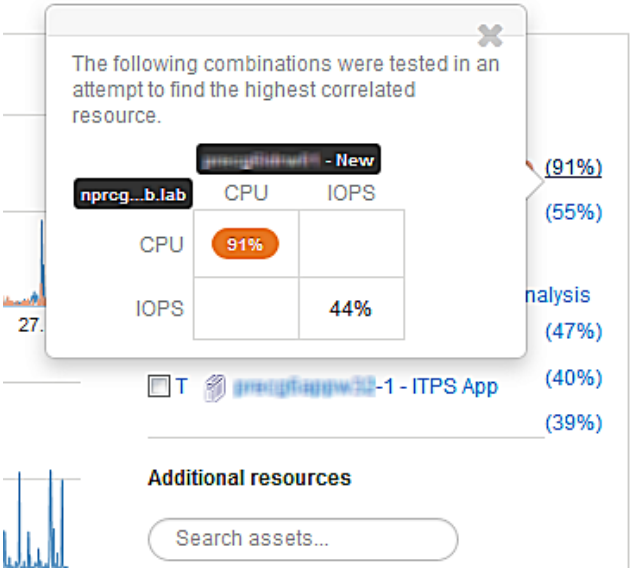
When you are researching performance problems and you open the *asset page* for a device, you should use the Top correlated resources list to refine data displayed in the performance charts. A resource with a high percentage indicates that resource has similar activity to the base resource.

### About this task

You are investigating a performance problem and opened the asset page for a device.

### Steps

1. In the **Top correlated resources** list, the first resource is the base resource. The correlated resources in the list are ranked by percentage of correlated activity to the first device. Click the linked percentage of correlation to see the details. In this example, the 91% correlation is in CPU, so both the base resource and this correlated resource have equally high CPU usage.




2. To add a correlated resource to the performance charts, select the check box in the **Top correlated resources** list for the resource you want to add. By default each resource provides the Total data available, but you can select only Read or only Write data from the menu on the check box.

   Each resource in the charts has a different color so that you can compare the performance measurements for each resource. Only the appropriate type of data is plotted for the selected measurement metrics. For example, CPU data does not include Read or Write metrics, so only Total data is available.

3. Click the linked name of the correlated resource to display its asset page.

4. If you do not see a resource listed in the Top correlated resources that you believe should be considered in the analysis, you can use the **Search assets** box to find that resource.

# Fibre Channel environment monitoring

Using OnCommand Insight's Fibre Channel asset pages, you can monitor the performance and inventory of the fabrics in your environment and be aware of any changes that might cause issues.

## Fibre Channel asset pages

Insight's asset pages present summary information about the resource, its topology (the device and its connections), performance charts, and tables of associated resources. You can use the fabric, switch, and port asset pages to monitor your Fibre Channel environment. Particularly helpful when troubleshooting a Fibre Channel issue is the performance chart for each port asset, which shows the traffic for the selected top contributor port. Additionally, you can also show buffer-to-buffer credit metrics and port errors in this chart, with Insight displaying a separate performance chart for each metric.

## Performance policies for port metrics

Insight enables you to create performance policies to monitor your network for various thresholds and to raise alerts when those thresholds are crossed. You can create performance polices for ports based on available port metrics. When a violation of a threshold occurs, Insight detects and reports it in the associated asset page by displaying a red solid circle; by email alert, if configured; and in the Violations Dashboard or any custom dashboard that reports violations.

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