

# Junos<sup>®</sup> Space Network Director

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## Juniper Networks Data Center Switching Management Pack for VMware vRealize Operations (vROps) User Guide

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*Junos<sup>®</sup> Space Network Director Juniper Networks Data Center Switching Management Pack for VMware vRealize Operations (vROps) User Guide*

4.1

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# About the Documentation

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Use this guide to configure and integrate Juniper Networks Data Center Switching Management Pack for VMware vRealize Operations (vROps) with vROps for monitoring the switches in a cloud environment, managed by Junos Space Network Director.

## Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <https://www.juniper.net/documentation/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

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## Documentation Conventions

Table 1 on page vi defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page vi defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> <b>show chassis alarms</b>  No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> <li>Introduces or emphasizes important new terms.</li> <li>Identifies guide names.</li> <li>Identifies RFC and Internet draft titles.</li> </ul>	<ul style="list-style-type: none"> <li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li> <li><i>Junos OS CLI User Guide</i></li> <li>RFC 1997, <i>BGP Communities Attribute</i></li> </ul>

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name:  [edit] root@# <b>set system domain-name</b> <i>domain-name</i>
<b>Text like this</b>	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> <li>To configure a stub area, include the <b>stub</b> statement at the [edit <b>protocols ospf area area-id</b>] hierarchy level.</li> <li>The console port is labeled <b>CONSOLE</b>.</li> </ul>
< > (angle brackets)	Encloses optional keywords or variables.	<b>stub</b> <default-metric <i>metric</i> >;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	<b>broadcast   multicast</b>  ( <i>string1</i>   <i>string2</i>   <i>string3</i> )
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	<b>community name members [ <i>community-ids</i> ]</b>
Indentation and braces ( { } )	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	

## GUI Conventions

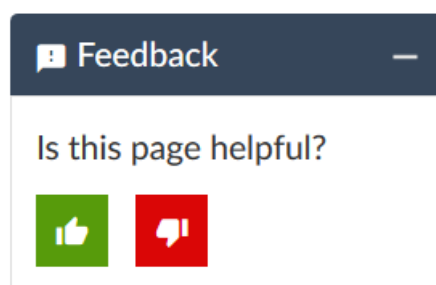
Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
<b>Bold text like this</b>	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> <li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li> <li>To cancel the configuration, click <b>Cancel</b>.</li> </ul>
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

We encourage you to provide feedback so that we can improve our documentation. You can use either of the following methods:

- Online feedback system—Click TechLibrary Feedback, on the lower right of any page on the [Juniper Networks TechLibrary](#) site, and do one of the following:



- Click the thumbs-up icon if the information on the page was helpful to you.
- Click the thumbs-down icon if the information on the page was not helpful to you or if you have suggestions for improvement, and use the pop-up form to provide feedback.
- E-mail—Send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net). Include the document or topic name, URL or page number, and software version (if applicable).

## Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active Juniper Care or Partner Support Services support contract, or are



covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <https://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

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For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

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- Search for known bugs: <https://prsearch.juniper.net/>
- Find product documentation: <https://www.juniper.net/documentation/>
- Find solutions and answer questions using our Knowledge Base: <https://kb.juniper.net/>
- Download the latest versions of software and review release notes: <https://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <https://www.juniper.net/company/communities/>
- Create a service request online: <https://myjuniper.juniper.net>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://entitlementsearch.juniper.net/entitlementsearch/>

## Creating a Service Request with JTAC

You can create a service request with JTAC on the Web or by telephone.

- Visit <https://myjuniper.juniper.net>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <https://support.juniper.net/support/requesting-support/>.

# 1

CHAPTER

## Juniper Networks Data Center Switching Management Pack for vROps

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# Understanding Juniper Networks Data Center Switching Management Pack for vROps

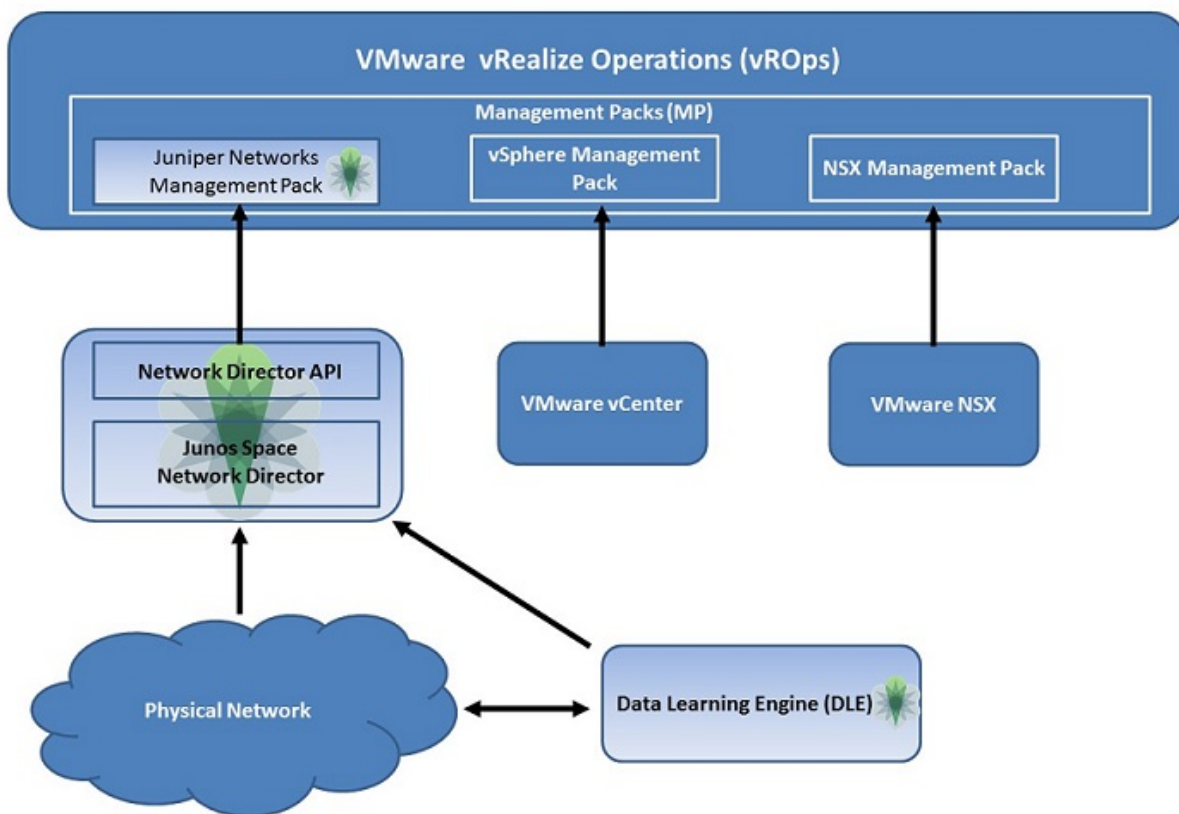
VMware vRealize Operations (vROps) is a component of VMware's vRealize suite of products. vROps provides an integrated, single-pane-of-glass(SPOG) view into the performance, capacity, and configuration management capabilities of VMware vSphere, physical, and hybrid cloud environments.

vROps management pack is part of a framework developed by VMware that enables vendors, such as Juniper Networks, to develop and integrate their plug-ins with vROps. This facilitates cloud administrators to monitor and manage the devices from the vendor along with VMware devices in a physical and cloud environment using vROps. Cloud administrators need not switch to the vendor's network management system to view device-specific information provided by the vendor.

Juniper Networks Data Center Switching Management Pack for vROps is a plug-in that you can install and integrate with vROps. After it is installed, the management pack obtains all the necessary monitoring data from Juniper Networks devices and displays the data in vROps.

[Figure 1 on page 12](#) is a schematic display of how Juniper Networks Data Center Switching Management Pack for vROps interacts with the other components within Network Director to display data center details in vROps.

Figure 1: J Interaction of Juniper Networks Data Center Switching Management Pack for vROps with Network Director Components



Juniper Networks Data Center Switching Management Pack for vROps provides cloud administrators with:

- A network health dashboard.
- A correlated view of virtual and physical network components.

Depending on the size of the network and traffic volume, you can choose to install vROps as a standalone node or a multinode cluster. In a standalone node, data and administration are handled by the same node. In a multinode cluster, you have a primary node that exclusively performs the administrative tasks. The additional nodes are configured to store data, collect data, provide load balancing, or provide high availability. In a multinode cluster, the primary node must be online before you can add additional nodes. For instructions on installing vROps as a standalone node or multinode cluster, see the [vROps documentation](#).

**NOTE:** Juniper Networks Data Center Switching Management Pack for vROps monitors and troubleshoots only those fabric devices that are configured in the Datacenter View in Network Director.

## Benefits of Juniper Networks Data Center Switching Management Pack for vROps

- Provides a holistic view of the data centers (that are managed by Network Director) through a single pane of glass in a vROps dashboard offering visibility into activity across the entire data center infrastructure.
- Enables administrators to identify the root cause of network fabric issues quickly and then perform deeper troubleshooting by means of a correlated health dashboard and easy navigation to the detailed views of the network provided by Junos Space Network Director.
- Provides effective and quick fault management by displaying the most volatile network fabrics based on alarms and the busiest network fabrics based on CPU and memory utilization.

### RELATED DOCUMENTATION

[Monitoring Juniper Networks Devices from vROps | 19](#)

[Managing Juniper Networks Data Center Infrastructure from vROps | 32](#)

[Performing Fault Management in vROps | 36](#)

## Adding and Configuring Juniper Networks Data Center Switching Management Pack for vROps

### IN THIS SECTION

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- [Specifying the Network Director Credentials in vROps | 15](#)
- [Specifying the VMware vCenter Details in vROps | 16](#)
- [Creating a Read-Only User in vROps | 17](#)
- [Adding a VMware vCenter in Network Director | 18](#)

Juniper Networks Data Center Switching Management Pack for vROps is a plug-in that you can add to VMware vRealize Operations (vROps) to have a single-pane of glass view into the performance, capacity,

and configuration management capabilities of the cloud data center that vROps manages. The data center can include Juniper Networks devices and VMware devices.

**NOTE:** You cannot uninstall or remove a management pack from any installation of vROps. However, you can upgrade a management pack to a later version.

This topic describes:

## Adding the Juniper Networks Data Center Switching Management Pack for vROps

Before you begin, ensure that you have:

- vROps version 6.0, 6.0.1, 6.1, 6.2, 6.3, 6.4, or 6.5 running
- Downloaded and extracted the appropriate Juniper Networks Management Pack to a folder on your local system.

If you have vROps version 6.0, 6.0.1, or 6.1 installed, you must download and use Juniper Networks Management Pack version 1.1.

If you have vROps version 6.2, 6.3, 6.4, or 6.5 installed, you must download and use Juniper Networks Management Pack version 2.0.

You can download the management pack from the [Software Download](#) page. The solution pack has a PAK extension.

To add the Juniper Networks Management Pack:

1. Log in to vROps as a user with administrative privileges.
2. From the left navigation pane, select **Administration** and then select **Solutions**. The Solutions page opens.
3. In the Solutions tab of the Solutions page, click +.
4. Browse and select the management pack (PAK file) from the folder to which you extracted the contents of the Juniper Networks Management Pack.
5. Select the option to either install the PAK file even if it is already installed without overwriting the existing settings or reset the default settings and overwrite to a newer version.

6. Click **Upload**.
7. Click **Next** after the upload completes.
8. Read and accept the license agreement. Click **Next**.

The installation might take several minutes to complete. The progress of the installation is displayed.

9. When the installation is complete, click **Finish**.

On successful installation, vROps lists Juniper Networks Management Pack as a solution in the Solutions page.

## Specifying the Network Director Credentials in vROps


After you add Juniper Networks Management Pack to vROps, you must perform a few more tasks to enable vROps to connect to Network Director and obtain all the necessary data and metrics.

Before you specify the credentials, make sure that you have added at least one vCenter using the Datacenter View in Network Director. For more information, see [Create a Data Center](#).


To perform the initial configuration:

1. Log in to vROps as a user with administrative privileges.
2. From the left navigation pane, select **Administration** and then select **Solutions**.

The Solutions page opens.

3. Select the Juniper Networks Management Pack for which you want to specify the Network Director credentials and click  on the toolbar.

The Manage Solution - Juniper Networks Management Pack page appears.

4. Select the Juniper adapter from the Adapter list.
5. Enter a display name and a description for the adapter instance in the Instance Settings section.
6. Enter the IP address of the Network Director server to which you want vROps to connect.
7. Click  to add credential details that vROps uses to log in to Network Director.

Specify the name by which you want to save the credentials. Enter the username and the password that vROps uses to connect to Network Director.

**NOTE:** The Network Director user that you specify must be part of the **Network Director – Admin, Super Administrator, or Network Director – Engineer** user role. You can modify user roles for Network Director users from the Junos Space user interface. For more details, see [Role-Based Access Control Overview](#).

8. Specify a username and password for a vROps user. This user must have at least read-only access to vROps.

This enables vROps to create relationships between VMware ESXi hosts and Juniper Networks data center devices, in vROps. Click **OK** to save the credentials.

For detailed steps to create a read-only user, see [“Creating a Read-Only User in vROps” on page 17](#).

9. Click **Test Connection** to test the connection between vROps and Network Director. vROps tests and displays the connection status.
10. Click **Save Settings** to complete the initial configuration. vROps gathers data from Network Director and builds the network in vROps. This might take a while depending on the number of data centers, devices, hosts, and virtual machines that are managed by Network Director.

## Specifying the VMware vCenter Details in vROps


If your data center uses VMware vCenters as the cloud infrastructure provider, then you must add those vCenters to vROps and Network Director to facilitate data collection from the virtual network. This topic describes the steps to add a vCenter in vROps. For detailed steps on adding the same vCenter server in Network Director, see [“Adding a VMware vCenter in Network Director” on page 18](#).

To add a vCenter in vROps:


1. Log in to vROps as a user with administrative privileges.
2. From the left navigation pane, select **Administration** and then select **Solutions**.

The Solutions page opens.



3. Select the **VMware vSphere** for which you want to specify the VMware vCenter details and click  on the toolbar.

The Manage Solution - VMware vSphere page appears.

4. Select **vCenter Adapter** from the Adapter list.
5. Enter a display name and a description for the adapter instance in the Instance Settings section.
6. Enter the IP address of the vCenter server.
7. Click  to add credential details that vROps uses to log in to the vCenter.  
Specify the name by which you want to save the credentials. Enter the username and the password that vROps uses to connect to the vCenter. This must be the user with administrative privileges on the vCenter server. Click **OK** to save the credentials.
8. Click **Test Connection** to test the connection between vROps and the vCenter server. vROps tests and displays the connection status.
9. Click **Save Settings** to complete the configuration.


## Creating a Read-Only User in vROps

You must add a user with read-only access in vROps for the Juniper Networks Management Pack to obtain data from vROps. This user must then be added to vROps from the Solutions tab for the vCenter Adapter.

To create a read-only user in vROps:

1. Click **Administration** in the left navigation pane.
2. Click **Access Control** in the left navigation pane.

The Access Control page appears.

3. Click  to add a user account.

The Add User window opens.

4. Enter the user details and click **Next**.

5. Click the **Objects** tab and select **ReadOnly** from the Select Role drop-down list.
6. Select **Assign this role to the user**.
7. Click **Finish**.

You can add this user to vROps by following the steps given in [“Specifying the VMware vCenter Details in vROps” on page 16](#).

## Adding a VMware vCenter in Network Director

To add a VMware vCenter in Network Director:

1. Log in to the Network Director.
2. Select Build mode and select Datacenter Views, from the Views list, click **Setup Datacenter** from the Tasks pane.  
The Setup Datacenter page opens.
3. Enter a name for the data center.
4. Click **Next** to specify details of the cloud infrastructure that the data center uses.
5. In the Cloud Infrastructure wizard page, click **Yes** to specify the cloud infrastructure for your data center.
6. Select **VMware vCenter** as the type of cloud infrastructure provider.
7. Enter the IP address or the hostname of the vCenter.
8. Specify the port that Network Director uses to connect to the server. The default port used to connect to a vCenter server is 443.

**NOTE:** You can modify the default and specify a port of your choice. If you do so, make sure to manually change the Junos Space firewall settings and apply those to the port you specify.

9. Specify the administrator username and password for the server you selected. The username and password must match the name and password configured on the server.

10. Click **Next** to specify the method that you want Network Director to use to build the data center network.
11. Select the Juniper Networks devices that you want to add to the data center from the Available Devices table and click >> to add it to the Selected Devices table.  
If you want to remove a device from the Selected Devices table, select the device and click <<.
12. Click **Done** to save the data center details.

A message window opens, displaying the status of the cloud infrastructure discovery job name and job ID. Click **OK**.

You can view the status of the discovery job in the Cloud Infrastructure Discovery Jobs page.

Network Director tries to discover the servers that you specified in the Cloud Infrastructure wizard page. Network Director then adds the remaining network infrastructure based on the details you specified in the Network Infrastructure wizard page. Once these two steps are complete, Network Director lists that data center along with the devices that are part of the network infrastructure under My Datacenters in the View pane.

## RELATED DOCUMENTATION

[Managing Juniper Networks Data Center Infrastructure from vROps | 32](#)

[Performing Fault Management in vROps | 36](#)

# Monitoring Juniper Networks Devices from vROps

## IN THIS SECTION

- [Using the Juniper Infrastructure Overview Dashboard | 20](#)
- [Using the Juniper Network Fabric Monitoring Dashboard | 25](#)
- [Using the Juniper Network Fabric Member Monitoring Dashboard | 28](#)
- [Using the Juniper Top Network Fabrics Dashboard | 30](#)
- [Using the Juniper Top Network Fabric Members Dashboard | 31](#)

After you add and configure Juniper Networks Data Center Switching Management Pack for vROps, vROps discovers and builds the data center network managed by Network Director in vROps. vROps also adds five dashboards to the vROps Dashboards list. Each dashboard contains various dashboard widgets that assist administrators to monitor and manage multiple data center from vROps without having to switch to a different network management application.

vROps adds the following dashboards to the Dashboards list:

- Juniper Infrastructure Overview
- Juniper Network Fabric Monitoring
- Juniper Network Fabric Member Monitoring
- Juniper Top Network Fabrics
- Juniper Top Network Fabric Members

This topic describes:

## Using the Juniper Infrastructure Overview Dashboard

### IN THIS SECTION

- [View the Data Center Connectivity | 21](#)
- [View the Top Alerts for your Data Center | 23](#)
- [View Relationship Between Various Devices in the Data Center | 24](#)

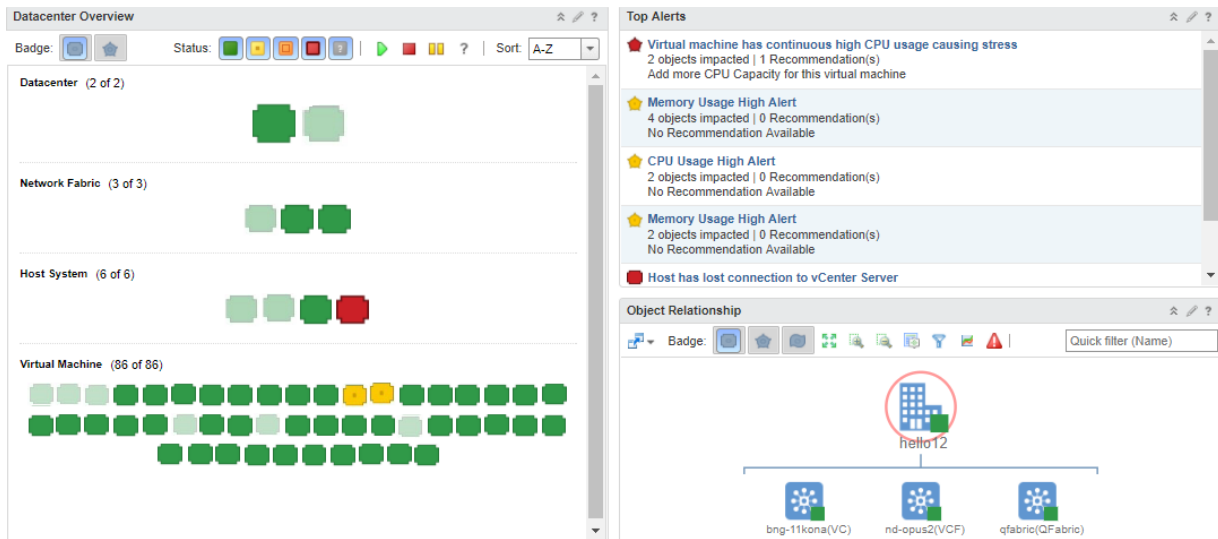
Enables you to view the topology and monitor the health of the data center network, by providing widgets. The Datacenter Overview widget displays all the data centers, underlying fabrics, hosts, and the connected virtual machines. If you click any data center to select it, the widget highlights the fabrics, hosts, and virtual machines that are part of that data center. You can view the top alerts, if any, for the selected data center in the Top Alerts widget. The Object Relationship widget displays the connectivity between the data center and the fabrics.

You can also filter the Datacenter Overview widget and the Object Relationship widget by two criteria—Health and Risk.

The Juniper Infrastructure Overview dashboard gives you an overview of the topology of the data center network and also enables you identify the top alerts for each data center network. The [Figure 2 on page 21](#) shows the Juniper Infrastructure Overview dashboard comprising of three widgets—Datacenter Overview,

Top Alerts, and Object Relationship. These widgets display all the data centers, underlying fabrics, host devices, and virtual machines that are part of your data center network. Each of these entities are grouped under the respective categories.

**Figure 2: Juniper Infrastructure Overview dashboard**



You can perform the following tasks from the Juniper Infrastructure Overview dashboard:

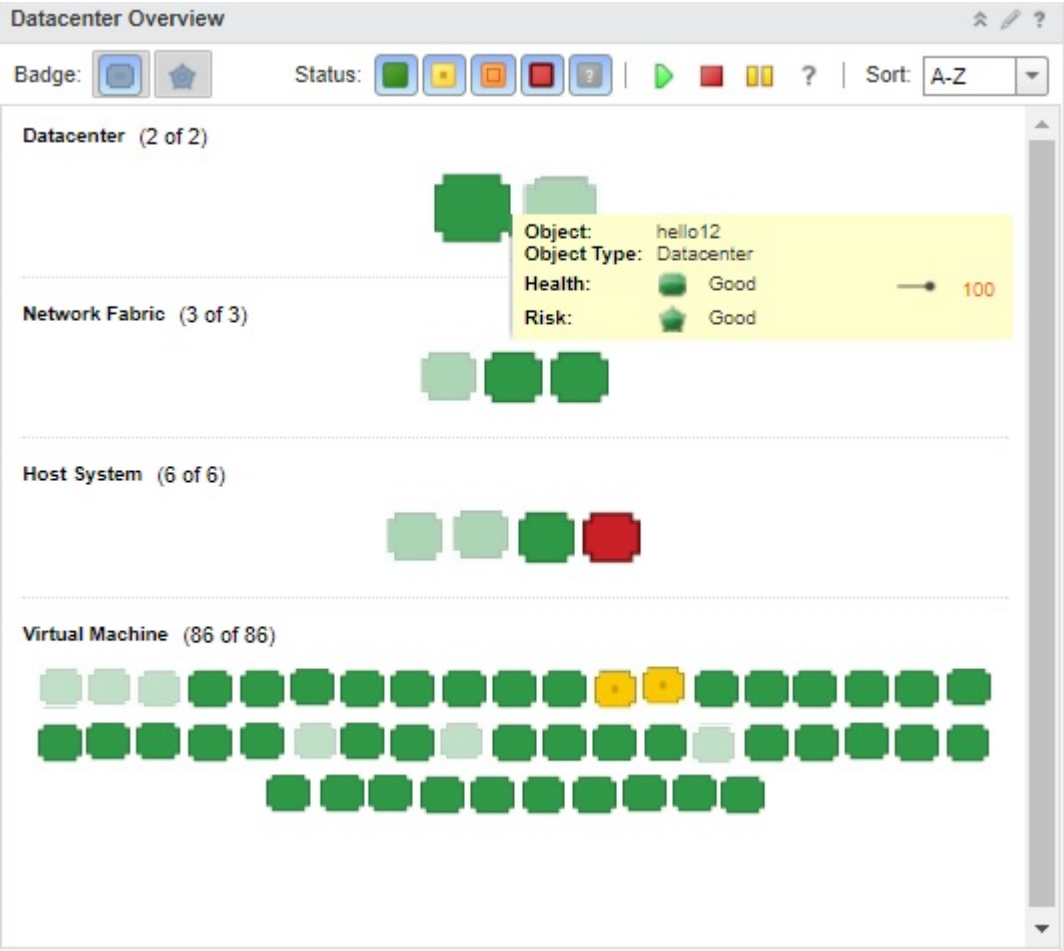
### View the Data Center Connectivity

You can view the connectivity between the various devices that form your data center, by using the Datacenter Overview widget. You can do the following:

- Select a data center, network fabric, host device, or a virtual machine to display the connected devices that form that data center. For example, if you select a data center, vROps highlights the connected network fabrics, host devices, and virtual machines in the Datacenter Overview widget.

In the [Figure 3 on page 22](#), you can see that the data center *hello12* is connected to two network fabrics which is connected to two host devices. The host devices host a set of virtual machines between them and these are highlighted in the Virtual Machines section.

Figure 3: Datacenter View





- View devices using two different modes—Health and Risk. Use the Health  and the Risk  buttons to view data center devices in the respective modes (see [Figure 3 on page 22](#)). These modes display device icons of different colors based on the health and risk status of a device. [Table 3 on page 22](#) describes what each device icon color indicates in each of these modes.

Table 3: Descriptions for Device Icons Based on Their Colors





Device icon color	In Health Mode	In Risk Mode
	Indicates that the device works fine.	Indicates that there are no risks or threats identified as of now.

Table 3: Descriptions for Device Icons Based on Their Colors (*continued*)

Device icon color	In Health Mode	In Risk Mode
	Indicates one or more minor issues in the device that might not impact the functioning of the device—for example, memory contention.	Indicates that the device has one or more minor risks that might not impact the functioning of the device. These include high CPU utilization, high memory utilization, high port utilization, high port latency high, or high port packet drop rate.
	Indicates an issue in the device that might impact the normal functioning of the device—for example, redundant connectivity or a disk Input/Output write latency issue.	Indicates that the device has major risks that can impact the normal functioning of the device.
	Indicates a major issue in the device that needs to be fixed immediately—for example, the link between two devices is down.	Indicates major risks that need immediate attention.

## View the Top Alerts for your Data Center

You can view the top alerts for your data center in the Top Alerts widget.

To view the alerts:

1. Select a data center or connected device in the Datacenter Overview widget.



vROps displays alerts for the data center, which include alerts for devices that are part of the data center, or the alerts for the selected device if you selected an individual device.

2. From the Top Alerts widget, you can:

- View the severity of the alert based on the color of the alert badge. [Table 3 on page 22](#) describes what each icon color indicates in the Health mode and the Risk mode.
- Click the short description of the alert to open and view a summary of the alert and the corrective action that you must take to get rid of the alert.

vROps opens the Risk Issues page as shown in [Figure 4 on page 24](#). This page displays the details about the alert and a table listing the alerts.

Figure 4: Risk Issues

Risk Issues				
<p><b>Virtual machine has continuous high CPU usage causing stress</b></p> <p>Virtual machine is experiencing CPU stress. CPU stress occurs when CPU workload exceeds the stress threshold for a significant amount of time.</p> <p>For details, go to the Analysis Stress tab for this virtual machine and expand the CPU resource container. You can adjust the stress threshold and the analysis time window in the policy</p> <p>2 object(s) exhibit this alert</p>				
Criticality ▾	Alert Details	Triggered On	Created On	Updated On
	<a href="#">View Details</a>	<a href="#">central-ms_Soumen</a>	8/5/17 3:04 AM	8/7/17 10:04 PM
	<a href="#">View Details</a>	<a href="#">regional-ms_Soumen</a>	8/5/17 3:04 AM	8/5/17 3:04 AM

- Click **View Details** in the Alert Details column to view the alert details.  
The Alert Details opens, which displays details about the alert.
- You can also click on the alert name in the Triggered On column to view the review the summary alert information for hosts and virtual machine.
- You can enter the alert name in the Quick filter (Name) field to display details of that only that alert in the table.
- Close the Risk Issues page to return to the Home page.

## View Relationship Between Various Devices in the Data Center

You can view the relationship between devices in the Object Relationship widget.

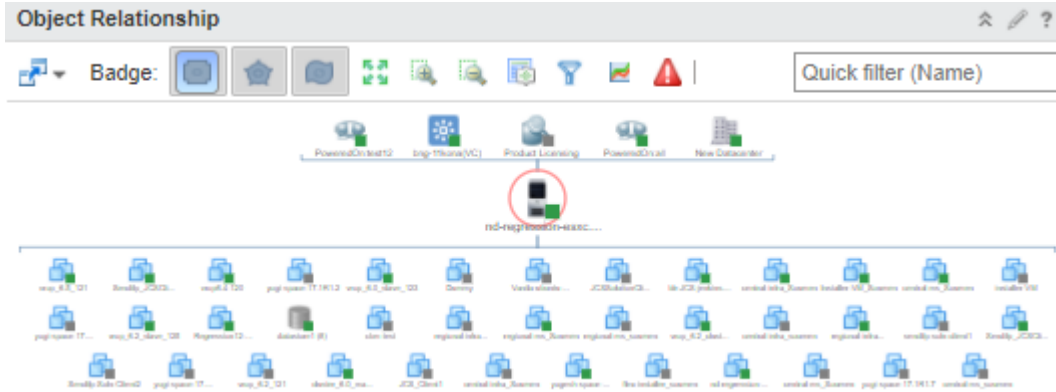
To view relationship between devices:

1. Select an object in the Datacenter Overview widget.





vROps displays the connection between the selected object and the connected devices. For example, if you select a host system in the Datacenter Overview widget, vROps displays the connected network fabric and the virtual machines that are part of the host system, in the Object Relationship widget as shown in [Figure 5 on page 25](#).



Figure 5: Object Relationship Between Hosts and Virtual Machines



2. From the Object Relationship widget, you can:

- Toggle the Health  Risk , and Efficiency  badges to view devices based on the health, risk, or efficiency.
- Click  to view the list of alerts for the devices that are displayed.

## Using the Juniper Network Fabric Monitoring Dashboard

### IN THIS SECTION

- [View Data Center Fabric Details | 26](#)
- [View CPU and Memory Utilization History and Forecast of a Fabric | 28](#)

Enables you to monitor Juniper devices that are part of a data center, by providing dashboard widgets. You can view the list of fabrics that are part of the data center in the Network Fabrics widget. You can then select a fabric from the list to see the CPU utilization and memory utilization of the fabric in the CPU Utilization History and Forecast widget and the Memory Utilization History and Forecast widget respectively.

The Juniper Network Fabric Monitoring dashboard enables you to monitor Juniper Networks fabric devices such as Virtual Chassis, Junos Fusion data center fabric, QFabric systems, Layer 3 Fabrics, and Virtual Chassis Fabric that are part of a data center, using the following widgets:

- Network Fabrics widget

- CPU Utilization History and Forecast widget
- Memory Utilization History and Forecast widget

To open the Juniper Network Fabric Monitoring dashboard:

1. While in the vROps home page, select **Juniper Network Fabric Monitoring** from the **Dashboard List**.

The Juniper Network Fabric Monitoring dashboard opens.

You can use the Juniper Network Fabric Monitoring dashboard to:

### View Data Center Fabric Details

The Network Fabrics widget displays the list of network fabrics that are part of all the data centers that are managed by Network Director. [Table 4 on page 26](#) describes the fields that are displayed in the Network Fabrics widget.

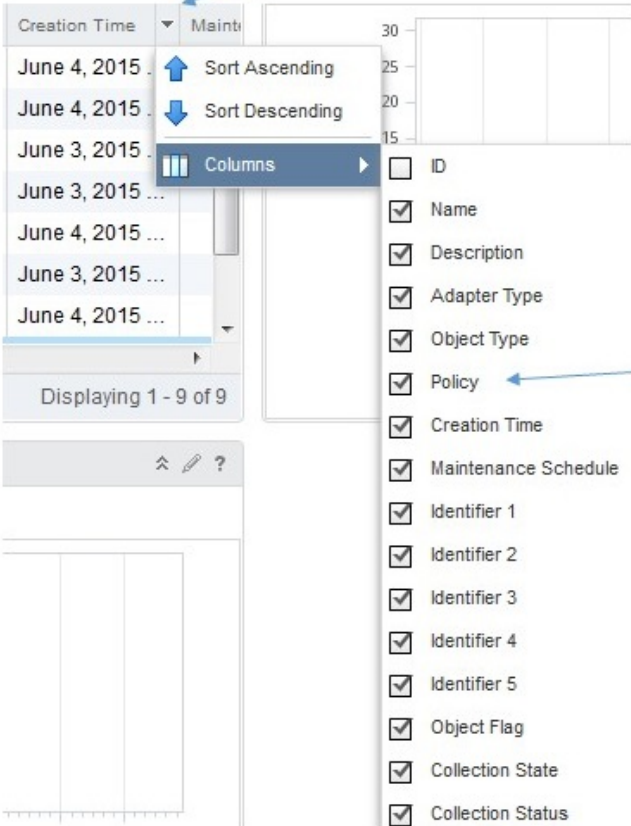
**Table 4: Network Fabrics widget Field Descriptions**

Field	Description
Name	Name of the device.
Description	Short description of the device.
Adapter Type	Type of adapter.
Object Type	Type of object.

By default, the table displays a few prefiltered fields. However, you can filter the table to display the fields that you want to, by following the steps shown in [Figure 6 on page 27](#).

Figure 6: Filtering Fields in a Table

1. Click the DOWN arrow on any column header



2. Select Columns and from the list of available fields, clear the check box corresponding to the field that you do not want to appear in the table

Creation Time	Mainti
June 4, 2015	
June 4, 2015	
June 3, 2015	
June 3, 2015	
June 4, 2015	
June 3, 2015	
June 4, 2015	

Displaying 1 - 9 of 9

- ☐ ID
- ☒ Name
- ☒ Description
- ☒ Adapter Type
- ☒ Object Type
- ☐ Policy
- ☒ Creation Time
- ☒ Maintenance Schedule
- ☒ Identifier 1
- ☒ Identifier 2
- ☒ Identifier 3
- ☒ Identifier 4
- ☒ Identifier 5
- ☒ Object Flag
- ☒ Collection State
- ☒ Collection Status

## View CPU and Memory Utilization History and Forecast of a Fabric

Select a fabric from the Network Fabrics table. vROps displays the CPU utilization and the memory utilization of the selected fabric in the CPU Utilization History and Forecast widget and the Memory Utilization History and Forecast widget respectively. You can use these widgets to view the historical, current, and the projected CPU and memory utilization for the selected fabric. The historic utilization data and the utilization forecast data are plotted in different colors as shown in the legend under the utilization graph.

## Using the Juniper Network Fabric Member Monitoring Dashboard

### IN THIS SECTION

- [View Fabric Member Details | 29](#)
- [View CPU Utilization and Memory Utilization of a Fabric Member | 30](#)

Enables you to monitor the fabric members of each Juniper device, that is part of a data center, by providing dashboard widgets. You can view the list of fabric members that are part of the device in the Network Fabric Members widget. You can then select a fabric member from the list to view the CPU utilization and memory utilization of the member in the CPU Utilization History and Forecast widget and the Memory Utilization History and Forecast widget respectively.

The Juniper Network Fabric Member Monitoring dashboard enables you to monitor the members of Juniper Networks fabric devices such as Virtual Chassis , Virtual Chassis Fabric that are part of a data center, using the following widgets:

- Network Fabric Members widget
- CPU Utilization History and Forecast widget
- Memory Utilization History and Forecast widget

To open the Juniper Network Fabric Member Monitoring dashboard:

1. While in the vROps home page, select **Juniper Network Fabric Member Monitoring** from the **Dashboard List**.

The Juniper Network Fabric Member Monitoring dashboard opens.

You can use the Juniper Network Fabric Member Monitoring dashboard to:

View Fabric Member Details

The Network Fabric Members widget displays the list of fabric members that are part of the network fabrics managed by Network Director. [Table 5 on page 29](#) describes the fields that are displayed in the Network Fabric Members widget.

Table 5: Network Fabric Members widget Field Descriptions

Field	Description
Name	Name of the member device.
IP Address	IP address of the member device.
Member Type	Indicates whether the member device belongs to a QFabric, Virtual Chassis Fabric, or a Layer 3 Fabric.
Device Name	Name of the data center fabric to which the member belong.
Collection State	Indicates the status of data collection from the member.

## View CPU Utilization and Memory Utilization of a Fabric Member


Select a fabric member from the Network Fabric Members table. vROps displays the CPU utilization and the memory utilization of the selected member in the CPU Utilization History and Forecast widget and the Memory Utilization History and Forecast widget respectively. You can use these widgets to view the historical, current, and the projected CPU and memory utilization for the selected fabric member. The historic utilization data and the utilization forecast data are plotted in different colors as shown in the legend under the utilization graph.

## Using the Juniper Top Network Fabrics Dashboard

Enables you to view and identify potential performance issues in your data center. The dashboard provides four widgets—The Top Network Fabrics by CPU Utilization widget, the Top Network Fabrics by Memory Utilization, the Top Noisiest Network Fabrics based on Alerts widget, and the Top Volatile Network Fabrics based on Metrics widget. You can click a row to view more details about that fabric and possible causes for the vulnerability of the fabric, if any.

You can view the top network fabrics based on CPU utilization, memory utilization, alerts, and volatility metrics by using the Juniper Top Network Fabrics dashboard. This dashboard enables you to assess the health of your data center network by identifying the fabrics that have a high CPU or memory utilization and large number of alerts.

To open and view the Juniper Top Network Fabrics dashboard:

1. While in the vROps home page, select **Juniper Top Network Fabrics** from the **Dashboard List**.  
The Juniper Top Network Fabrics dashboard opens.
2. You can view the following details by using the widgets in the Juniper Top Network Fabrics dashboard:
  - Top Network Fabrics by CPU Utilization widget—Displays the top fabrics based on CPU utilization.
  - Top Network Fabrics by Memory Utilization widget—Displays the top fabrics based on memory utilization.
  - Top Noisiest Network Fabrics based on Alerts widget—Displays the top fabrics based on the number of alerts that are generated from the fabric and the connected devices.
  - Top Volatile Network Fabrics based on Metrics widget—Displays the top fabrics based on anomalies in the CPU and memory utilization over a period of time.
3. Select a fabric and click  to view more details about the selected fabric.

## Using the Juniper Top Network Fabric Members Dashboard


**NOTE:** This dashboard displays member details only for Virtual Chassis and Virtual Chassis Fabric devices.

Enables you to view the performance of network fabric members, in terms of CPU utilization, memory utilization, alerts, and metrics. This dashboard provides four widgets—Top Network Fabric Members by CPU Utilization widget, Top Network Fabric Members by Memory Utilization widget, Top Noisiest Network Fabric Members based on Alerts widget, and Top Volatile Network Fabric Members based on Metrics widget.

You can view the top network fabric members based on CPU utilization, memory utilization, alerts, and volatility metrics by using the Juniper Top Network Fabrics dashboard. This dashboard enables you to assess the health of your data center devices by identifying the members that have a high CPU or memory utilization and alerts.

**NOTE:** Juniper Networks Data Center Switching Management Pack for vROps supports only fabric devices—Virtual Chassis, Virtual Chassis Fabric, QFabric, or Layer 3 Fabric, Junos Fusion data center fabric—that are part of a datacenter in Network Director.

To open and view the Juniper Top Network Fabric Members dashboard

1. While in the vROps home page, select **Juniper Top Network Fabric Members** from the **Dashboard List**.  
The Juniper Top Network Fabric Members dashboard opens.
2. You can view the following details by using the widgets in the Juniper Top Network Fabric Members dashboard:
  - Top Network Fabric Members by CPU Utilization widget—Displays the top fabric members based on CPU utilization.
  - Top Network Fabric Members by Memory Utilization widget—Displays the top fabric members based on memory utilization.
  - Top Noisiest Network Fabric Members based on Alerts widget—Displays the top fabric members based on the number of alerts that are generated from the fabric and the connected devices.
  - Top Volatile Network Fabric Members based on Metrics widget—Displays the top fabric members based on anomalies in the CPU and memory utilization over a period of time.
3. Select a fabric member and click  to view more details about the selected member.

## RELATED DOCUMENTATION

Understanding Juniper Networks Data Center Switching Management Pack for vROps | 11

## Managing Juniper Networks Data Center Infrastructure from vROps

### IN THIS SECTION


- [Open the Juniper Networks Data Center Infrastructure View | 32](#)
- [View Data Center Details | 33](#)
- [Open Network Director from vROps | 34](#)

You can view the Juniper Networks data center infrastructure by using the various dashboards that are installed when you add the Juniper Networks Management Pack to vROps. In addition to this, you can use the Juniper Infrastructure view to display additional details for the data center and devices.

This topic describes how to:

### Open the Juniper Networks Data Center Infrastructure View

To open the Juniper Networks Data Center Infrastructure View:

1. Do one of the following:
  - Click  in the left navigation pane tool bar.
  - Select **Environment** from the list in the left navigation pane tool bar
2. From the Environment Overview pane, select **Juniper Infrastructure**.

The Juniper Networks Data Center Infrastructure View page opens. The left pane displays the list of data centers that are part of Juniper infrastructure. The right pane displays details about the selected data center. Navigate the tabs in the right pane to get more details about each data center.

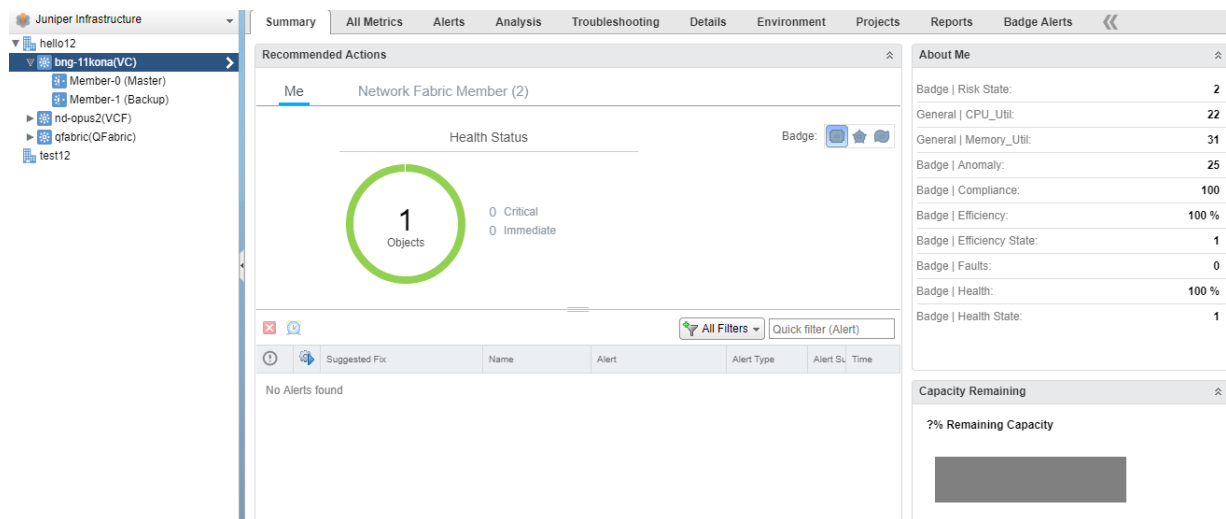


## View Data Center Details

To view the data center details in the Juniper Networks Data Center Infrastructure View page:

1. Select a network fabric from the left navigation pane to view details about the fabric.
2. Use the following tabs in the right pane of the Juniper Networks Data Center Infrastructure View page to view more details about the selected data center:
  - Summary—Displays information summary under three categories—Health, Risk, and Efficiency. Each category displays a badge and top alerts for the fabric and descendants, for example the [Figure 7 on page 33](#) shows the health status of the fabric device *bng-11kona(VC)*. The badge color indicates the status of the fabric against each category.

Figure 7: Summary - Health Status



- All Metrics—Displays the object relationship between the selected fabric and other devices. Double-click the device that you are troubleshooting, to view it in the context of parent and child objects.
- Alerts—Displays all the alerts for the selected fabric and descendants. Click the alert description for displaying details about an alert.
- Analysis—Displays anomalies in the fabric, if any.
- Troubleshooting—Enables you to troubleshoot issues in the fabric and descendants by using the data presented under four tabs:
  - Symptoms—Displays the symptoms that you can use to analyze and troubleshoot issues.
  - Timeline—Displays a customizable timeline. You can use the timeline to identify common trends over time.

- Events—Displays changes that occurred on the selected fabric or descendants because of user actions, system actions, triggered symptoms, or generated alerts.
- Details—Displays details about the network fabric and the fabric members, such as the current active alerts, CPU and memory utilization of the fabric device and fabric members, and a list of symptoms. To view any of these details, click the corresponding item in the list. vROps displays the details for the item.
- Environment—Displays the topology of the network fabric along with the data centers and the fabric members.
- Projects—Displays list of all the projects generated for the selected object, group, or application.
- Badge Alerts—Displays the Health, Risk, and Efficiency details.
- Reports—You can generate reports using an existing report template or create a new report template and generate reports using the new template.

**NOTE:** See the vROps online Help to understand more about the Reports functionality.

## Open Network Director from vROps

You can directly launch Network Director from vROps to view the port utilization and alarm details of a member device or to view the connectivity of member devices.

To open Network Director from vROps:

1. Select a network fabric from the left navigation pane.
2. Do one of the following:

- To view the port utilization of a member of Virtual Chassis, Virtual Chassis Fabric, QFabric devices, Layer 3 Fabric, select **View Port Utilization** from the **Actions** menu.

The Network Director user interface opens in a new window displaying the Utilization for Device page. This page displays the port utilization trend for the selected devices or member. For more details, see [Utilization for Device page](#) documentation.

**NOTE:** This functionality is available for Layer 3 Fabric only at the member level and not at the fabric level.

- To view alarm details for the selected fabric, select **View Alarms** from the **Actions** menu.

The Network Director user interface opens in a new window. After you log in, Network Director opens the Fault mode displaying the current active alarms for the selected fabric in various alarm widgets.

**NOTE:** This functionality is available for Layer 3 Fabric only at the member level and not at the fabric level.

- To view connectivity between the fabric and other devices such as switches, hosts, and virtual machines, select **View Device Connectivity** from the **Actions** menu.

The Network Director user interface opens in a new window. After you log in, Network Director opens the Build mode displaying the Device Connectivity page for the selected fabric.

**NOTE:** The View Device Connectivity task is not available for QFabric devices.

- To view connectivity between the members of the selected fabric, select **View Fabric Internal Connectivity** from the **Actions** menu.

Network Director user interface opens in a new window. After you log in, Network Director opens the Build mode displaying the Connectivity view for the type of fabric you selected.

**NOTE:** The View Fabric Internal Connectivity task is available only for Virtual Chassis, Virtual Chassis Fabric devices, and QFabric devices.

## RELATED DOCUMENTATION

[Understanding Juniper Networks Data Center Switching Management Pack for vROps | 11](#)

[Adding and Configuring Juniper Networks Data Center Switching Management Pack for vROps | 13](#)

[Managing Juniper Networks Data Center Infrastructure from vROps | 32](#)

# Performing Fault Management in vROps

## IN THIS SECTION

- [Configuring Thresholds in vROps | 37](#)
- [Modifying the Polling Interval in vROps | 38](#)

- Juniper Networks Data Center Switching Management Pack for vROps triggers the following alarms in each category—Risk and Health:
  - Risk category
    - CPU Usage High Alert
    - Memory Usage High Alert
    - Port High Latency Alert
    - Port High Utilization alarm
    - Port High Packet Drop alarm
  - Health category
    - Port Link Down alarm
    - Device Connectivity Down alarm

**NOTE:** Except *CPU Usage High Alert* and *Memory Usage High Alert*, all other alarms are managed by Network Director. If alarms managed by Network Director are cleared from the Network Director user interface, they will also be cleared from vROps.

When any of the alarm thresholds are crossed, the system raises an alarm. All alarms are displayed in the Alerts page in vROps. While in the vROps home page, click **Alerts** in the left navigation pane to open the Alerts page. From this page, you can also view the timeline and object relationship for each alarm.


This topic describes:

## Configuring Thresholds in vROps

When you install the Juniper Networks plugin for vROps, the thresholds for memory utilization and CPU utilization are already set. However, if you want to modify this value for your data center network, you can do so from the Metric / Supermetric Symptom Definition page in vROps.

To change the threshold values in vROps:


1. Do one of the following:

- Click  in the left pane toolbar.
- Click **Content** in the left navigation pane.

vROps opens the Content pane.

2. Click **Symptom Definition** in the Content pane.
3. If not already selected, click **Metric / Supermetric Symptom Definition** to select it. vROps opens the Metric / Supermetric Symptom Definition page in the right pane.
4. Select **Adapter Type** from the **All Filters** box and enter *Juniper* in the search box. Click **OK** to search for symptoms specific to Juniper Networks adapters.



Alternatively, scroll and locate the symptoms specific to Juniper Networks adapters—CPU Usage High Symptom, Device Connectivity Down Symptom, and Memory Usage High Symptom.

5. To change a threshold value, select a symptom and click .
6. Modify the threshold value as per your network requirements and click **Save**.

## Modifying the Polling Interval in vROps

Polling interval is the time after which vROps contacts Network Director to obtain monitoring data for the data center devices. You might need to modify this value based on your network size and traffic density.

To modify the polling interval in vROps:

1. Open the **Solutions** page and note the name of the adapter instance that you gave while adding the Juniper Networks Management Pack in vROps.
2. Do one of the following:
  - Click  in the left pane toolbar.
  - Click **Administration** in the left navigation pane.
3. Click **Environment Overview** in the left navigation pane.
4. In the **Filter** box in the right pane, enter the name of the adapter instance that you noted in step 1. Select the Name from the drop-down list in the **Filter** box and press **Enter**.  
vROps filters the list and displays the adapter instance with the name that you specified.
5. Select the adapter instance row and click .  
The Edit Object window opens.
6. Modify the value in the **Collection Interval** field to the required polling interval. This value must be specified in minutes.
7. Click **OK** to save the changes.

### RELATED DOCUMENTATION

[Adding and Configuring Juniper Networks Data Center Switching Management Pack for vROps | 13](#)

[Monitoring Juniper Networks Devices from vROps | 19](#)

[Understanding Juniper Networks Data Center Switching Management Pack for vROps | 11](#)