



CHAPTER 5

Discovering Network Devices

To generate reports, Prime Performance Manager must discover your network devices. This is accomplished by importing the device inventory from Cisco Prime Network, running device discovery from Prime Performance Manager, or a combination of both. Before this can occur, the SNMP credentials to allow Prime Performance Manager to connect to devices must be created. (For Y.1371 SLA and Ethernet flow point QoS reports, Telnet or SSH credentials are required.)

The following topics tell you how to add the network devices that you want to monitor to Prime Performance Manager:

- [Device Discovery Requirements, page 5-1](#)
- [Importing Devices From Prime Network, page 5-2](#)
- [Prime Performance Manager Device Discovery, page 5-4](#)

Device Discovery Requirements

Before you begin device discovery, review the devices Prime Performance Manager supports at:

http://www.cisco.com/en/US/products/ps11715/products_device_support_tables_list.html

In addition, the Prime Performance Manager Devices Readme lists the known devices and software versions that have been used by customers and in Cisco labs during testing and deployments. While these devices are not formally supported, informal experience indicates they can be used successfully with Prime Performance Manager. To access the Devices Readme, choose **Readmes and Commands** from the Help menu, then choose **Devices Readme**.

To produce network performance reports, Prime Performance Manager accesses the devices, determines the device type and installed hardware. It checks for provisioned functions and technologies and, based on the assigned polling frequencies, begins the reporting process. Before this can occur, devices must be discovered and assigned to units. The units connect to the devices using the required SNMP or Telnet and SSH credentials.

Device discovery is accomplished using one or both of the following methods:

- Import the device inventory from Cisco Prime Network. This can be done from the Prime Performance Manager GUI or by running the `ppm inventoryimport` command. (For information about this command, see [ppm inventoryimport, page B-32](#).)
- Run device discovery from Prime Performance Manager. This can be done from the Prime Performance Manager GUI or by running the `ppm discover` command. (For information about this command, see [ppm discover, page B-22](#).)

To discover a device, the following information is required:

- The device IP address or hostname.
- The SNMP credentials authorizing Prime Performance Manager to access the device SNMP engine. SNMP V2 requires a community string. SNMP V3 requires a combination of username, authentication protocol, authentication password, privacy protocol, and privacy password, depending on the device configuration.
- If Y.1731 SLA or Ethernet flow point reports are enabled, Telnet or SSH credentials are required as well. The number of credentials and their content depend on the device configuration.

**Note**

If you are running only CSV-based reports, only the device IP address or hostname is required.

If you import the device inventory from Cisco Prime Network, Prime Performance Manager gets the device IP addresses and SNMP, Telnet, and SSH credentials from the Prime Network. If you run device discovery from Prime Performance Manager, you must add the credentials to Prime Performance Manager before you run the device discovery.

Discovering Gateways and Units

Reports can be generated for Prime Performance Manager gateways and units to help you monitor the gateway and unit server health and performance. To enable Prime Performance Manager gateway and unit reports, you must:

- Enable SNMP on the gateway and unit servers.
- Add the gateway and unit SNMP credentials. See [Adding SNMP Credentials, page 5-5](#).
- Run discovery from Prime Performance Manager to acquire the gateways and units. See [Running Device Discovery from Prime Performance Manager, page 5-10](#).

If you are importing devices from Prime Network, you have two options for adding the Prime Performance Manager gateways and units:

- To import Prime Network devices with strict synchronization enabled, acquire the gateways and unit in the Prime Network inventory before you perform the import. (The strict synchronization import option restricts the devices managed by Prime Performance Manager to those imported from Prime Network.)
- When importing the devices, do not enable strict synchronization. After the devices are imported, run device discovery from Prime Performance Manager to acquire the gateways and units.

Importing Devices From Prime Network

To import a Prime Network device inventory, Prime Performance Manager connects to the Prime Network gateway and retrieves the Prime Network device IP addresses, SNMP, Telnet, or SSH credentials, and HTTP/s for vCenter.. All Prime Network devices are retrieved except those whose VNEs:

- Are in Maintenance investigation state.
- Are ICMP or cloud VNEs.
- VNEs whose admin status is down.

Prime Performance Manager then connects to the devices and probes them for supported polling parameters. After the device connections are established and MIB profiles created, Prime Performance Manager maintains communication with the Prime Network gateway. If new Prime Network devices are added, Prime Performance Manager adds those devices. If a Prime Network device VNE goes into Maintenance state, Prime Performance Manager changes the device to unmanaged and stops polling. When the VNE state changes, Prime Performance Manager changes the device state back to managed and begins polling.

Strict Synchronization

Strict synchronization is a Prime Network import option that restricts Prime Performance Manager to Prime Network devices only. If strict synchronization is enabled, you cannot discover or manage devices that reside outside of Prime Network. Additionally, you cannot edit SNMP, Telnet, or SSH entries and you cannot edit device names. If strict synchronization is not enabled, all device discovery and SNMP, Telnet, or SSH device editing capabilities remain enabled. Strict synchronization is useful when you want a tight relationship between Prime Performance Manager and Prime Network to ensure all reports are Prime Network device reports.

To import Prime Network devices, you need the following Prime Network gateway information:

- IP address or hostname
- Port.
- Prime Network administrator or configurator username and password. The user must have a device scope set for all network elements.

Complete the following steps to import the device inventory from Cisco Prime Network using the Prime Performance Manager GUI. This procedure requires a Level 5 (administrator) user level.



Note

For information on importing Prime Network devices using the CLI, see [ppm inventoryimport](#), page B-32.

-
- Step 1** Log into the Prime Performance Manager GUI as a System Administrator user.
- Step 2** From the Administration menu, choose **Prime Network Integration**.
- Step 3** In the Prime Network window, enter the following information:
- Host Name or IP Address—Enter the Prime Network gateway hostname or IP address.
 - Port—Enter the Prime Network gateway port. The default Cisco Prime Network web services port is 9003. The Port field accepts values from 1 to 65535.
 - Unsecured Port—Indicates the port entered in the Port field is an unsecure port intended for BQL debugging.
 - User Name—Enter the Prime Network gateway administrator or configurator username.
 - Password—Enter the Prime Network user password.
 - Strict Sync—Check this box if you want Prime Performance Manager to monitor only Prime Network devices. If you check Strict Sync, Prime Performance Manager cannot connect to devices that have not been added to Prime Network first, and certain functionality is disabled, including the Network menu Discovery option and the ability to edit SNMP, Telnet, and SSH entries.
- Step 4** From the Prime Network Integration toolbar, click the **Import Inventory** tool.
- The Prime Network device inventory import proceeds.



Note If Prime Performance Manager finds duplicate device custom names, an error is issued.

- Step 5** After it completes, from the Network menu, choose **Devices** to review the devices that were added. For information about the displayed device properties, see [Displaying Network-Level Device Properties, page 8-2](#).
- If you want to enable Prime Performance Manager cross-launches from Prime Network, complete the “[Enabling Prime Network Cross-Launching](#)” procedure on page 5-4.
- Step 6** To display information about the last Prime Network inventory synchronization, on the Administration Prime Network Integration window toolbar, click **Last Inventory Import Info**.
- The date and time and status of the last inventory import is displayed.

Enabling Prime Network Cross-Launching

After you import the Prime Network device inventory, you can enable cross launching so that Prime Network users can launch Prime Performance Manager from Prime Network Vision.

To enable cross-launches from Prime Network:

- Step 1** Log into the Prime Performance Manager GUI as a System Administrator user.
- Step 2** From the Administration menu, choose **Prime Network Integration**.
- Step 3** From the Prime Network toolbar, click the **Install Cross Launch** tool.



Note If you change the Prime Performance Manager gateway JSP port, server name, or SSL status, you must enable Prime Network cross launching again.

Prime Performance Manager Device Discovery

Importing devices from Prime Network is the most common method for adding devices to Prime Performance Manager, particularly if Prime Performance Manager is integrated with the Prime suite. (For information, see [Importing Devices From Prime Network, page 5-2](#).)

You can also run device discovery from Prime Performance Manager. Use this discovery method when:

- You are not running Prime Network or do not wish to enable reports on Prime Network devices.
- You imported Prime Network devices but want to add devices that are not in the Prime Network inventory.

Before you run device discovery from Prime Performance Manager, you must add the device credentials. Credential management and device discovery are covered in the following topics:

- [Managing Device Credentials, page 5-5](#).
- [Running Device Discovery from Prime Performance Manager, page 5-10](#)

Managing Device Credentials

You can run device discovery from Prime Performance Manager if you are not importing devices from Prime Network or wish to add devices that are not in the Prime Network inventory. Before you can do this, however, you must add the device credentials (or edit the credentials through the Edit Device Credentials dialog) so Prime Performance Manager can communicate with the device.

SNMP is the primary protocol used by Prime Performance Manager for device communication for nearly all Prime Performance Manager reports. For some reports, such as SLS 1731 reports, other communication methods are used, including Telnet and SSH. Adding and managing device credentials are covered in the following topics:

- [Adding SNMP Credentials, page 5-5](#)
- [Editing SNMP Credentials, page 5-6](#)
- [Deleting SNMP Credentials, page 5-6](#)
- [Adding Telnet and SSH Credentials, page 5-7](#)
- [Deleting Telnet/SSH Credentials, page 5-9](#)
- [Telnet and SSH Credential Notes, page 5-9](#)
- [Adding SNMP Credentials, page 5-5](#)

Adding SNMP Credentials

Complete the following steps to add the SNMP credentials to communicate with network devices discovered by Prime Performance Manager. This procedure is required if you run device discovery from Prime Performance Manager. You do not need to perform it if you imported devices from Prime Network and do not wish to add devices not in the Prime Network inventory.

**Note**

To add SNMP credentials using the CLI, see [ppm addsnmpcomm, page B-6](#).

- Step 1** Log into the Prime Performance Manager GUI as a System Administrator user.
- Step 2** From the Network menu, choose **SNMP Editor**.
- Step 3** From the SNMP Editor toolbar, click the **Add a New SNMP Entry** tool.
- Step 4** In the Add SNMP Entry dialog box, enter the following information:
- IP Address Range or Hostname—Enter the device IP address or DNS name, or range of devices. An asterisk (*) indicates a wildcard value.
 - Read Community—Enter the SNMP community name used by the device for read access to the information maintained by the SNMP agent on the device.
 - Username (v3)—Enter the username (SNMP v3).
 - Authentication Protocol (v3)—Enter the authentication protocol (SNMP v3):
 - md5—Uses the Hash-based Message Authentication Code (HMAC) MD5 algorithm for authentication
 - sha—Uses the HMAC SHA algorithm for authentication
 - Authentication Password (v3)—Enter the authentication password (SNMP v3),
 - Privacy Protocol (v3)—Enter the privacy protocol (SNMP v3):

- 3des—Uses Data Encryption Standard (DES) v3.
 - des—Uses the Data Encryption Standard (DES).
 - aes128—Uses Advanced Encryption Standard (AES) 128-bit encryption.
 - Privacy Password (v3)—Enter the privacy password (SNMP v3).
- Step 5** Click **OK**.
- Step 6** Repeat Steps 3–5 until all SNMP credentials are added.
- Step 7** On the SNMP Editor toolbar, click **Save All SNMP Entries**.
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Editing SNMP Credentials

SNMP credentials are required for communication with devices that are discovered by Prime Performance Manager. If you need to edit the SNMP credentials:

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- Step 1** Log into the Prime Performance Manager GUI as a System Administrator user.
- Step 2** From the Network menu, choose **SNMP Editor**.
- Step 3** In the SNMP table, edit any of the following SNMP parameters. See [Adding SNMP Credentials, page 5-5](#), for parameter descriptions.
- IP Address Range or Hostname
 - Read Community
 - Username (v3)
 - Authentication Protocol (v3):
 - md5
 - sha
 - Authentication Password (v3)
 - Privacy Protocol(v3):
 - 3des
 - des
 - aes128
 - Privacy Password (v3)
- Step 4** When finished, on the SNMP Editor toolbar, click **Save All SNMP Entries**.
-

Deleting SNMP Credentials

Complete the following steps to delete the SNMP credentials from Prime Performance Manager.

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- Step 1** Log into the Prime Performance Manager GUI as a System Administrator user.
- Step 2** From the Network menu, choose **SNMP Editor**.

- Step 3** Select the SNMP credential table row(s) that you want to remove by checking the box(es) on the far left column.
- Step 4** On the Network SNMP Editor toolbar, click **Delete Selected SNMP Entries**.
- Step 5** When finished, on the SNMP Editor toolbar, click **Save All SNMP Entries**.

Adding Telnet and SSH Credentials

Y.1731 reports can be enabled on devices running IOS and IOS-XR, and Ethernet flow point QoS reports can be enabled on devices running IOS-XR. If you plan to run Y.1731 reports, you must add the Telnet or SSH device credentials to Prime Performance Manager.

To add the Telnet or SSH credentials:

- Step 1** Log into the Prime Performance Manager GUI as the administrator user.
- Step 2** From the Network menu, choose **Telnet/SSH Editor**.
- Step 3** In the Device Credentials Editor toolbar, click the **Add a New Device Credential for a Device** tool.
- Step 4** In the Add a Credential dialog box, enter the following:
- User Name—Enter the device login username.
 - Password—Enter the password for the login user.
 - Enable User Name—Enter the privileged username.
 - Enable Password—Enter the privileged user password.
 - Connection Protocol—Choose the transport protocol to be used to communicate with device:
 - Telnet—Telnet
 - SSHv1—SSH Version 1
 - SSHv2—SSH Version 2
 - WSMA_SSH—Web Services Management Agent over SSHv2. WSMA is an infrastructure framework that allows external applications to monitor and control Cisco devices. WSMA uses transports such as SSH, HTTP, and HTTPS to access a set of Web Services agents residing on the Cisco device.
 - vCenter_HTTPs
 - vCenter_HTTP
 - ESXi_HTTPs
 - ESXi_HTTP



Note

When you define the telnet/ssh credential for vCenter and ESXi devices, make sure the user account you use has the session privileged. For information, see [Hypervisor Discovery Requirements, page 5-14](#).

- XEN_TLS
- KVM_TLS



Note XEN_TLS and KVM_TLS have discovery requirements. See [XEN and KVM TLS Discovery Requirements](#), page 5-14

- HyperV_HTTPs
- HyperV_HTTP
- Port—The device port to be used by the transport protocol chosen in the Protocol field.
- Sub System—The subsystem used by transport protocol. If the subsystem is defined on the device, enter it here. A blank string is the default subsystem for SSH. The default subsystem for WSMA is “wsma”.

Step 5 Click **OK**.

The new credential is added to the Telnet/SSH credential table.

Step 6 Test the credential:

- a. In the new credential table row Actions column, click the **Test the Credential** tool.

A Testing Credentials for [device name] window appears. If Prime Performance Manager succeeded in connecting to the device with the credentials you entered, the following is displayed:

```
****Starting Credentials Test****
Connection test successfully!
****Test Completed****
```

If Prime Performance Manager could not connect to the device, an error is displayed, for example:

```
****Starting Credentials Test****
Exception while connecting to device!
****Test Completed****
```

Step 7 In the Testing Credentials window, click **Close**.

Step 8 If the credentials test succeeded, on the Device Credentials Editor toolbar, click the **Save All Credentials** tool to save the new credential.

If the credentials test failed, verify the credentials with your network administrator and check network connectivity. You can update the credential and run the test again until it succeeds. Additionally, you can:

- From the Actions column, click the **Clear the Row** tool to clear the row contents or click the **Delete this Credential** tool to delete the entire credential.
- From the Device Credentials Editor toolbar, click the **Reload Credentials from the Server** tool to reload all the Telnet and SSH credentials.



Note Verify the Telnet/SSH credential has permission to execute the CLI terminal length 0 and terminal width 0, or Prime Performance Manager might not be able to collect data from the CLI.

After you add the Telnet and SSH credentials, you might want to perform the following tasks:

- Run device discovery. See [Chapter 5, “Discovering Network Devices,”](#) for procedures.
- Enable the Y.1731 and Ethernet Flow Point reports: from the Performance menu, choose **Reports**, click the **Report Status** tab, enable the **IP SLA: Y.1731** and **IP QoS: Transport and Availability** reports. For more information, see [Chapter 7, “Managing Reports, Dashboards, and Views.”](#)

Deleting Telnet/SSH Credentials

Complete the following steps to delete the Telnet/SSH credentials from Prime Performance Manager.

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- | | |
|---------------|---|
| Step 1 | Log into the Prime Performance Manager GUI as a System Administrator user. |
| Step 2 | From the Network menu, choose Telnet/SSH Editor . |
| Step 3 | Select the Telnet/SSH credential table row(s) that you want to remove by checking the box(es) on the far left column. |
| Step 4 | On the Network Telnet/SSH Editor toolbar, click Delete Selected Telnet/SSH Entries . |
| Step 5 | When finished, on the Telnet/SSH Editor toolbar, click Save All Telnet/SSH Entries . |
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Telnet and SSH Credential Notes

After adding the Telnet and SSH credentials, running device discovery, and enabling the Y.1731 and Ethernet Flow Point reports, review the following information:

- **Default Credential**—Prime Performance Manager includes a default *.*.* Telnet credential. The default values are from XMP_PAL.properties file. You can edit XMP_PAL.properties to set new initial default credential. If you change the default credentials in the web GUI and save it, your new default credentials will be saved to credential file instead of property file, which means now the default credentials are from credential file.
- **Device Discovery**—During device discovery, the Telnet and SSH credentials of discovered devices are displayed in a table beneath the SNMP credentials. The Telnet and SSH search algorithm seeks an exact match first. If no exact match is found, the default entry is used for device Telnet/SSH access credential.
- **Events**—If a Telnet or SSH credential issue arises, a Credential Problem state event is displayed in the device summary indicating an issue accessing the device by its Telnet or SSH credential exists.
- **Reports**—Only the Y.1731 SLA and Ethernet Flow Point reports require Telnet or SSH credentials. All other reports use SNMP polling.
- **Prime Network Integration**—When you import device credentials from Prime Network, the protocol credential, including Telnet, SSH_v1 and SSH_v2, are imported with the SNMP credentials. vCenter_HTTP/s is also imported from the Prime Network UCS cluster VNE. For protocols not supported by Prime Performance Manager, the default protocol, Telnet, is used and relevant information is logged.



Tip To view detailed information about a device inventory import, click the question mark icon in Prime Performance Manager toolbar.

- **Commands**—Telnet and SSH credentials can be managed using the following commands:
 - ppm addcreds—Adds the Telnet and SSH credentials to access the device. See [ppm addcreds, page B-5](#).
 - ppm showcreds—Shows the Telnet or SSH credential configured for a device. See [ppm setpctrpdestination, page B-61](#).
 - ppm deletecreds—Deletes the Telnet or SSH credential from the device. See [ppm deletecreds, page B-19](#).

- ppm xmllpoll—Retrieves the device XML output. See [ppm xmllpoll](#), page B-81.

Adding Credentials for Cisco Carrier Packet Transport Devices

Adding credentials for Cisco Carrier Packet Transport (CPT) devices requires a few additional steps because the CPT chassis has a control card and two or more line cards. One line card runs the Cisco IOS image. The CPT control card controls access to the line cards.

To Prime Performance Manager, the control card and the line card running the Cisco IOS image appear as a separate devices that use the same IP address for management. Performance statistics reside on both the control card and the line card running the Cisco IOS image. To gather both sets of statistics using the same IP address, you must complete the following steps so that Prime Performance Manager can reach the line card with the Cisco IOS image through the control card (a process called SNMP relay):

- Step 1** Set up a community string for the CPT 200 chassis and card. Card discovery utilizes SNMP relay, so one community string is used for both the chassis and the card. The community string is specified as follows:

```
ppm addsnmpcomm -i [ ipaddress ] -c public
```

- Step 2** Set up Telnet credentials for the chassis and card. This is a single row specified as follows:

```
ppm addcreds -i [ ipaddress ] -u CISCO15 -r Telnet -o 23
```

The credentials database is keyed by IP address, so only a single entry can exist. Chassis access is controlled by this entry. Access to the card uses the entry credentials, but Prime Performance Manager dynamically determines the port. The port is generated internally as '2000 + slot number'.

- Step 3** Run device discovery to discover the CPT chassis and card using either the GUI (see [Running Device Discovery from Prime Performance Manager](#), page 5-10), or the command line:

```
ppm discover [ipaddress ipaddress@2
```

The '@2' tells Prime Performance Manager the card is reachable through SNMP relay using the specified IP address. The device name is suffixed with the slot#. If the IP address is resolvable to a device name, the name will have the slot number appended accordingly. For example:

```
ipaddress@2  
devicename@2
```

- Step 4** Verify that the CPT devices are discovered in the GUI and device details are displayed including state, IOS version, description, device type, and other details.

- Step 5** Verify that reports are generated based on the device capabilities.

Running Device Discovery from Prime Performance Manager

Device discovery is accomplished either by importing devices from Prime Network (see [Importing Devices From Prime Network](#), page 5-2), or by running device discovery from Prime Performance Manager.

To run device discovery from Prime Performance Manager you enter IP addresses, address ranges, subnets, DNS hostnames, then launch discovery. The collection of addresses used for device discovery can be saved as device seed files for future use.

Before you begin device discovery, you will need:

- A list of IP addresses, address ranges, and subnets that you want Prime Performance Manager to use for discovery.
- A device seed file containing the IP addresses, address ranges, and subnets that you want Prime Performance Manager to use for discovery. If you are running discovery for the first time, you will enter the IP addresses manually, after which you can create the seed file for later use.

To run discovery from Prime Performance Manager:

Step 1 Log into the Prime Performance Manager GUI as a System Administrator user.

Step 2 From the Network menu, choose **Discovery**.

The Discover Network window appears. Window areas include:

- Discovery Seeds—Displays the seed files containing the address information you want Prime Performance Manager to use for device discovery.
- SNMP Parameters—The SNMP parameters that will be used to connect to devices. See [Adding SNMP Credentials, page 5-5](#).
- Telnet/SSH Parameters—The Telnet/SSH parameters that will be used to connect to devices if you will run Y.1731 or Ethernet flow point reports. See [Adding Telnet and SSH Credentials, page 5-7](#).

Step 3 Load a device seed file:

To load a seed file from saved files:

- a. From the Discover Network toolbar, click **Load Seeds**.

The Load File dialog box displays the following information and options:

- Folder icon—Click this icon to go up one folder in the directory structure.
- Type—Indicates whether the item in the table is a file or a folder.
- Name—Seed file or folder name.
- Last Modified—Date and time the seed file or folder was last modified.
- Size (bytes)—Size of the seed file or folder, in bytes.

- b. Choose a seed file. To make it your preferred startup file, click **Make This My Preferred Startup**.

- c. If needed, you can:

- Modify file names by entering the new name in the Name column
- Delete files by selecting them and clicking **Delete**.

- d. Click **OK**.

Prime Performance Manager saves any changes you made, closes the dialog box, and returns to the Discovery Network window. Device address information from the seed file is displayed in the Seed Devices File pane. SNMP and Telnet/SSH parameters for each seed device is shown in the SNMP and Telnet/SSH areas.

To create a seed file:

- a. Enter an IP address, IP address range, IP address/subnet, CIDR subnet, or DNS hostname in the IP address field. Example inputs include:
- IP Address: 111.222.333.555
 - Address Range: 111.222.333.555-800
 - CIDR: 111.222.333.555/24 or 111.222.333.555/255.255.255.0

- DNS Hostname: abc_router
 - b.** Click **Add**. The device address or range is added to the seed file.
 - c.** Repeat Steps **a** and **b** until you have all device address information added to the file. (Should you wish to remove the address or range, select it and click **Delete**.)
- Step 4** After all devices are added to the seed file, click **Save Seeds** from the Discover Network toolbar.
- Step 5** In the Save File dialog box:
- a.** If you want to create a new directory for the file, click **New Folder**, enter the folder name, then click **OK**. Alternatively, click **Go Up One Folder** to navigate to a directory above the current one.
 - b.** Enter the file name, then click **OK**. The new file is saved and automatically loaded into the Seed Devices File pane.
- Step 6** When you are ready to start device discovery, click **Discover Network**.
- The Discover Network tool changes to Stop Discovery.
 - A Discovery In Progress message appears in the title bar of all Prime Performance Manager client windows.
- The Network Devices summary window appears. (For Network Devices parameter descriptions, see [Table 8-2 on page 8-2](#).) Devices requested for discovery will display the status, Waiting and the status reason, For Unit. As the unit completes the initial device discovery, the status changes to the detected device status, which is usually Active with status reason, None.
- The time required to complete device discovery depends on multiple factors including number of devices, device types, the number of enabled reports, and network latency.
- Step 7** To view the devices that Prime Performance Manager discovered, from the Navigation menu, choose **Devices**. (See [Displaying Network-Level Device Information, page 8-1](#) for information about displayed device parameters.) By default, discovered devices are sorted by alarm severity. If you suspect that Prime Performance Manager did not discover all of the devices, verify that:
- Prime Performance Manager server can ping the devices.
 - SNMP is enabled on the devices.
 - Prime Performance Manager is configured with the correct SNMP community name.
- If you suspect that Prime Performance Manager did not discover all the devices, run the device discovery again.
- Step 8** To view information about the last discovery, click **Last Discovery Info** on the Network Discovery toolbar. The date and time of the last discovery and discovery status is displayed.
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Data Center Device Support

Prime Performance Manager supports the following devices used for data centers.

- Cisco ASA 5500
- Cisco Nexus 7000 Series
- Cisco Nexus 5000 Series
- Cisco Nexus 4000 Series
- Cisco Nexus 3000 Series

- Cisco Nexus 2000 Series
- Cisco ACE 20/304710
- Cisco Nexus 1000v
- Cisco Nexus 1010
- Cisco UCS FIC 6100
- Cisco UCS FIC 6200
- Cisco UCS 5100
- Cisco UCS 2100 (IO Module)
- Cisco UCS B-series
- Cisco UCS C-series
- Cisco MDS 9100
- Cisco MDS 9200
- FWSM
- HyperVisor
- VMWare

Some data center devices or device modes require you to perform special steps to enable Prime Performance Manager support. These are described in the following topics:

- [Discovering Nexus Switches in VDC Mode, page 5-13](#)

Discovering Nexus Switches in VDC Mode

The Cisco Nexus operating system, Cisco NX-OS, supports virtual device contexts (VDCs). VDCs allow Cisco Nexus 7000 data center switches to be virtualized at the device level. Each configured VDC presents itself as a unique device to connected users within the framework of that physical switch. The VDC runs as a separate logical entity within the switch, maintaining its own unique set of running software processes, having its own configuration, and being managed by a separate administrator. A Nexus can be configured with four VDCs. Each context appears as a device.

Prime Performance Manager polls the VDC separately. This means you must enter all VDC management IP addresses and credentials, including SNMP and Telnet/SSH, into Prime Performance Manager so that Prime Performance Manager can poll the statistics and inventory data for the Data Center view.

To discover Nexus VDCs:

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- Step 1** Log into the Cisco Nexus switch as the administrator user. Refer to the Cisco Nexus user documentation for login procedures.
- Step 2** Following instructions in the Cisco Nexus user documentation, create the VDCs under the default VDC instance, for example:
- ```
ppm7000a(config)# vdc ?
 <WORD> Create a new vdc
```
- Step 3** Allocate the interfaces to the VDCs under the default VDC instance, for example:
- ```
ppm7000a(config-vdc)# allocate interface ethernet 1/37-48
```
- Step 4** Switch to the new VDC and initialize the VDC configuration following the Nexus wizard:

- admin username/password,
- snmp RO/RW credential,
- Mgmt 0 IP address (for Prime Performance Manager polling),
- Mgmt vrf route gateway, and so on

For example:

```
ppm7000a# switchto vdc ?
ppm7000a  VDC number 1
vdc2      VDC number 2
vdc3      VDC number 3
vdc4      VDC number 4
```

In the following Cisco Nexus VDC configuration example, the access VDC is managed through the 192.168.119.53 address. This address will be used as the seed during Prime Performance Manager device discovery.

```
telnet ppm70002
vdc Access id 2
  allocate interface Ethernet1/1-8
vdc Agg id 3
  allocate interface Ethernet1/9-16
vdc Core id 4
  allocate interface Ethernet1/17-24
switchto vdc access
config
vrf context management
  ip route 0.0.0.0/0 192.168.119.1
vlan 622
  name Management
username admin password 5 $1$rvdiuLA.$8j5arfEmxh1Bw7YtTNHCr/  role vdc-admin
snmp-server community SMFtest123 group vdc-operator
interface mgmt0
  ip address 192.168.119.53/25
```

Hypervisor Discovery Requirements

Prime Performance Manager can discover a variety of virtualized hypervisor devices including Hyper-V, Xen, KVM and EXSi. For VMWare hypervisors, Prime Performance Manager uses the virtualization API, libvirt. This API requires a user with a session privilege. In VMWare:

1. Create a role named "****".
2. Create a user on the Windows machine where VCenter is installed and assign that user the role, "Clone of read-only."
3. Give the user the session privilege.

XEN and KVM TLS Discovery Requirements

XEN TLS and KVM TLS hypervisors require libvirtd 0.9.13 or above to be enabled on the hypervisor. For security, use TLS+SASL for authentication. More details can be found in libvirt website. For the Prime Performance Manager server, install library cyrus-sasl to support SASL authentication.

In addition to TLS elements, you must install some dependency libraries on the Prime Performance Manager server for hypervisor reports including libgcrypt, libintl and libiconv. For Solaris, make sure the 64 ELF libraries are used because 32 ELF is default library type.

