



Managing Devices

The device inventory is a collection of information about the network elements that QPM can manage.

The following topics describe how to manage devices in QPM:

- [Understanding the Device Inventory, page 4-1](#)
- [Adding Devices to the Device Inventory, page 4-3](#)
- [Working with Devices, page 4-14](#)
- [Working with Network Elements, page 4-25](#)
- [Searching for Devices and Network Elements, page 4-32](#)
- [Working with Device Groups, page 4-34](#)

Understanding the Device Inventory

The device inventory is a collection of information about the network elements that QPM can manage. Network elements are devices and components of devices on which QoS can be configured. Examples of network elements include devices (routers, switches, and layer 3 switches), cards, interfaces, subinterfaces, and VLANs. For more information about network elements, see [Working with Network Elements, page 4-25](#).

Using Device Folders To Organize Your Inventory

Device folders are groups of devices that you can create for organizational purposes, for example, to distinguish edge routers from core routers. For more information, see [Working with Network Elements, page 4-25](#).

Using Device Groups

Device groups are groups of devices that are created and administered using ACS. You can use multiple device groups only if you use ACS to manage device access. For more information, see [Working with Device Groups, page 4-34](#).

Default Device Group

The inventory always contains one device group named the default device group. If you are not using ACS device groups to group devices, your inventory will contain only the default device group.

The default device group (like all QPM device groups) has properties that are unique to QPM. You can edit some of these properties. For more information, see [Editing Device Group Properties, page 4-37](#).

Communicating With Devices Using SSH

QPM can communicate with devices in the inventory using either Telnet or secure shell (SSH). SSH provides more security than Telnet because communication with SSH is encrypted and authenticated.

You must configure SSH on the device before QPM can communicate with it using SSH. When you configure SSH on devices, follow these guidelines:

- Configure a device public key size of 1024 bits or more.
- Define a user name on the device.

Use one of the following methods to configure QPM to use SSH to communicate with a device:

- Select the Enable SSH check box in the Device Properties page to enable SSH communication with that device. For more information, see [Viewing and Editing Device Properties, page 4-15](#).
- Select the Enable SSH check box in the Device Group Properties page to enable SSH communication as the default for a device group. For more information, see [Editing Device Group Properties, page 4-37](#).

Adding Devices to the Device Inventory

To manage the QoS configuration on a device or any of its elements with QPM, you must first add it to the inventory. When you add a device to the inventory, QPM discovers the device on the network to obtain the properties that it stores about the device. Therefore, devices must be running and accessible on the network before you can add them to the inventory.

You can only add a device to the inventory if you have sufficient access permissions to it. The Import Devices Wizard shows you which devices you cannot import because of insufficient permissions.

When you add a device to the inventory, all of its network elements that QPM supports are automatically added. For more information about network elements, see [Working with Network Elements, page 4-25](#).

Device Group Assignment

If you use ACS for user authentication, QPM assigns each imported device to the same QPM device group to which it is assigned in ACS. If a device is not assigned to an ACS device group, it is assigned to the QPM default device group.

If you are using CiscoWorks Common Services for user authentication, all devices you import are added to the QPM default device group.

OS Detection and IOS Mapping

QPM uses the device model type and operating system (OS) version number to load device capabilities to the inventory. All subversions of a certain version are translated to the major version, unless QPM explicitly supports the minor version. In QPM, new minor versions are mapped to the last supported minor version and not to the major version.

Both the device software version and the mapped software version are displayed in the Device Table page:

- OS Version—OS version that QPM detected.
- Mapped OS Version—OS version to which the detected OS version is mapped.

If QPM does not support an imported device's Cisco IOS version, the device is assigned the status "Unsupported," and no Mapped OS version is assigned to it. You cannot perform any tasks on devices that have the status Unsupported. If the

device model is supported by QPM but the Cisco IOS version is not, you can upgrade the device to a supported Cisco IOS version and then rediscover the device to make it available in QPM.

Device Model Discovery

If QPM does not support an imported device model, then the device is assigned the status “Unsupported” and the model appears as “Unknown” in the Device Table. You cannot perform any tasks on devices that have the status Unsupported. The device’s interfaces are not discovered or imported.

Device System Name

You can add a device to the inventory by providing either its IP address or its DNS name (if it is registered in DNS). Whichever of these values you provide becomes the device’s primary name in QPM.

If the device has a system name configured, it is detected when QPM discovers the device. The device system name is added to the Device Table, as another method for you to identify the device.

You cannot use device DNS names that contain the backslash (\) character.

Device Access Parameters

Device access parameters are the passwords and community strings that QPM needs to log into and configure devices. QPM obtains device access parameters for devices you add to the inventory in the following ways:

- When adding a device manually, you can either enter the device access parameters, or you can use the destination device group’s default access parameters. To use default access parameters, leave the access parameters fields blank.
- When importing from a CSV file, QPM obtains each device’s access parameters from the following sources, in this order:
 - The device’s record in the CSV file.
 - The default access parameters configured in the CSV file.
 - The destination device group’s default access parameters.
- When importing from RME, the device access parameters are taken from RME. If RME does not provide access parameters, the destination device group’s default access parameters are used.

For more information about default device access parameters, see [Configuring Default Device Access Parameters, page 4-12](#).

The following topics describe how to add devices to the inventory:

- [Adding a Single Device, page 4-5](#)
- [Importing Devices from a Device Inventory CSV File, page 4-6](#)
- [Importing Devices from RME, page 4-8](#)
- [Importing Virtual Devices, page 4-10](#)
- [Importing Devices from QPM 2.1x, page 4-11](#)
- [Configuring Default Device Access Parameters, page 4-12](#)
- [Viewing Device Discovery Status, page 4-14](#)

Adding a Single Device

To add a single device you enter the required device information, then QPM discovers the device on the network to obtain the rest of the device information.

Before You Begin

Obtain the following information for each device you are adding:

- DNS name of the device or IP address of the device or one of its interfaces.
- If you are not using the device group default access parameters to connect to the device, you must obtain the device access parameters necessary to connect to it.

For more information about default device access parameters, see [Configuring Default Device Access Parameters, page 4-12](#).

Procedure

-
- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Add Device** from the TOC. The Import Devices Wizard - General page appears.

- Step 3** Do the following in the Import Devices Wizard - General page:
- a. Select the Manual radio button.
 - b. Enter the device IP address in the Device IP field.
 - c. If you are not using the default device access parameters, enter the necessary device access parameters in the corresponding fields.
 - d. Click **Next**. The Import Devices Wizard - Select Devices page appears.

For more information about the Import Devices Wizard - General page, see [Import Devices Wizard - General Page, page A-23](#).

- Step 4** In the Import Devices Wizard - Select Devices page, select the check box next to the device you are adding, then click **Finish**.

The Discovery Status page appears, where you can monitor the progress of the add operation. For more information, see [Viewing Device Discovery Status, page 4-14](#).

Related Topics

- [Adding Devices to the Device Inventory, page 4-3](#)
- [Using QPM Tables, page 3-8](#)
- [Using QPM Wizards, page 3-9](#)
- [Troubleshooting Device Management Problems, page 11-7](#)

Importing Devices from a Device Inventory CSV File

You can add multiple devices simultaneously to the inventory by importing them from a comma-separated value (CSV) device inventory file created using CiscoWorks Resource Manager Essentials (RME).

During the import process, QPM presents a listing of QPM-supported devices in the CSV file. It does not include devices that are not supported by QPM. You select which devices to import.

You can import a particular device from a CSV file or directly from RME only once. After you import a device, you update its information and properties in QPM. QPM also tracks which devices you choose not to import from CSV files

and RME during the import process. If you re-import from a CSV file or RME again in the future, you can choose to import only those devices that have never been imported before.

When you import from a CSV file, QPM discovers all devices in the file.

QPM assigns access parameters to the devices based on the following sources:

- The CSV file.
- The QPM default access parameters. For more information about default access parameters, see [Configuring Default Device Access Parameters, page 4-12](#).

Before You Begin

Export a device inventory CSV file using RME. For information on the format of the CSV file, see:

http://www.cisco.com/en/US/docs/net_mgmt/ciscoworks_resource_manager_essentials/3.4/user/guide/ug_appb.html

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Add Device** from the TOC. The Import Devices Wizard - General page appears. For information about this page, see [Import Devices Wizard - General Page, page A-23](#).
- Step 3** Do the following in the Import Devices Wizard - General page:
- a. Select the Import from CSV file radio button.
 - b. Enter the path to the CSV file in the File field, or click **Browse** to navigate to the file.
 - c. Select the Import only new RME devices check box to import only the devices that have not been previously imported from RME.
 - d. Click **Next**. The Import Devices Wizard - Select Devices page appears.
- Step 4** In the Import Devices Wizard - Select Devices page, select the check boxes next to the devices you want to add, then click **Finish**.

The Discovery Status page appears, where you can monitor the progress of the add operation. For more information, see [Viewing Device Discovery Status, page 4-14](#).

**Tip**

Common causes of device discovery failure include incorrect Telnet or SNMP passwords, incorrect IP addresses, and unavailable devices.

Related Topics

- [Adding Devices to the Device Inventory, page 4-3](#)
- [Using QPM Tables, page 3-8](#)
- [Using QPM Wizards, page 3-9](#)
- [Troubleshooting Device Management Problems, page 11-7](#)

Importing Devices from RME

You can add multiple devices to the inventory by importing them from a supported release of Resource Manager Essentials (RME) directly, without saving the RME device inventory to a file.

During the import process, QPM presents a listing of QPM-supported devices in the RME inventory. It does not include devices that are not supported by QPM. You select which devices to import.

You can import a particular device from RME or a CSV file only once. After you import a device, you update its information and properties in QPM. QPM also tracks which devices you choose not to import from RME or CSV files during the import process. If you re-import from RME or a CSV file again in the future, you can choose to import only those devices that have never been imported before.

When you import a device from RME, QPM checks the device model to see whether it is supported by QPM. If it is supported, QPM starts the discovery process, and it is imported. If the model is not supported, QPM does not start the discovery process and it is not imported.

For information about defining device access parameters during import, see [Adding Devices to the Device Inventory, page 4-3](#).

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Add Device** from the TOC. The Import Devices Wizard - General page appears.
- Step 3** Do the following in the Import Devices Wizard - General page:
- a. Select the Import from RME radio button.
 - b. Enter the IP address of the RME server in the Host Location field.
 - c. Enter a valid RME user name in the User Name field.
 - d. Enter the password for the user name in the Password field.
 - e. Select the Import only new RME devices check box to import only the devices that have not been previously imported from RME.
 - f. Click **Next**. The Import Devices Wizard - Select Devices page appears.
- Step 4** In the Import Devices Wizard - Select Devices page, select the check boxes next to the devices you want to add, then click **Finish**.

The Discovery Status page appears, where you can monitor the progress of the add operation. For more information, see [Viewing Device Discovery Status, page 4-14](#).

Related Topics

- [Adding Devices to the Device Inventory, page 4-3](#)
- [Using QPM Tables, page 3-8](#)
- [Using QPM Wizards, page 3-9](#)
- [Troubleshooting Device Management Problems, page 11-7](#)

Importing Virtual Devices

You can import virtual devices from a file for testing and demonstration purposes. Virtual devices are not physical devices, but rather are defined in a file that contains the same device information required to import a physical device.

You create a file containing a virtual device by exporting device inventory information. For more information, see [Exporting Device Information, page 4-16](#).

Each device in the inventory must have a unique IP address. If the virtual device file you want to import contains a virtual device with an IP address that is already in the inventory, you must edit the IP address in the file (which is in XML format) before you can import the virtual device.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Add Device** from the TOC. The Import Devices Wizard - General page appears.
- Step 3** Do the following in the Import Devices Wizard - General page:
- Select the Import Virtual Devices from File radio button.
 - Enter the path to the virtual devices file in the File field, or click **Browse** to navigate to the file.
 - Click **Next**. The Import Devices Wizard - Select Devices page appears.
- Step 4** In the Import Devices Wizard - Select Devices page, select the check boxes next to the devices you want to add, then click **Finish**.

The Discovery Status page appears, where you can monitor the progress of the add operation. For more information, see [Viewing Device Discovery Status, page 4-14](#).

Related Topics

- [Adding Devices to the Device Inventory, page 4-3](#)
- [Using QPM Tables, page 3-8](#)
- [Using QPM Wizards, page 3-9](#)

Importing Devices from QPM 2.1x

You can import devices from a QPM 2.1x database that was exported to an XML file.

During the import process, QPM presents a listing of QPM-supported devices in the import file. It does not include devices that are not supported by QPM. You select which devices to import.

Before You Begin

Export a QPM 2.1x database using the QPM 2.1x export utility. See the *Installation Guide for QoS Policy Manager* for more information.

Procedure

-
- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Add Device** from the TOC. The Import Devices Wizard - General page appears. For information about this page, see [Import Devices Wizard - General Page, page A-23](#).
- Step 3** Do the following in the Import Devices Wizard - General page:
- Select the Import from QPM 2.x radio button.
 - Enter the path to the file in the File field, or click **Browse** to navigate to the file.
 - Click **Next**. The Import Devices Wizard - Select Devices page appears.
- Step 4** In the Import Devices Wizard - Select Devices page, select the check boxes next to the devices you want to add, then click **Finish**.

The Discovery Status page appears, where you can monitor the progress of the add operation. For more information, see [Viewing Device Discovery Status, page 4-14](#).



Tip

Common causes of device discovery failure include incorrect Telnet or SNMP passwords, incorrect IP addresses, and unavailable devices.

Related Topics

- [Adding Devices to the Device Inventory, page 4-3](#)
- [Using QPM Tables, page 3-8](#)
- [Using QPM Wizards, page 3-9](#)

Configuring Default Device Access Parameters

Device access parameters are the passwords and community strings that QPM needs to log into, import, and configure devices. These parameters include TACACS and Telnet passwords.

When QPM connects to a device, it logs into the device using TACACS authentication. If this fails, it uses local authentication. This login process is used for both communication methods—SSH and Telnet.

You can configure default device access parameters that are assigned to devices when you import them into the inventory.

**Note**

If you are using ACS and multiple device groups, each device group has its own set of default device access parameters.

When you add devices to the inventory, the default device access parameters are used to import the devices unless you override them. Each method of importing devices has its own method of overriding the defaults; see the related topics for more information.

You can configure device access parameters for an individual device, or for all devices in a device group.

Before You Begin

QPM assumes you are using standard user name and password prompts. If you have defined non-standard prompts on the devices, you must update the QPM configuration to recognize your prompts. See [QPM cannot log into a device, page 11-7](#), for information on how to update the QPM configuration.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** To change parameters for a single device, click the name of the device. The Device Properties page appears:
To change parameters for a device group:
- a. Select **Device Groups** from the TOC. The Device Groups page appears.
 - b. In the Device Groups page, click the name of the device group you want to modify. The Device Group Properties page appears.
- Step 3** Do the following in the Device Properties page, or the Device Group Properties page:
- a. Open the Default Access Parameters area by clicking the arrow next to its heading.
 - b. Modify the access parameters by entering new values. For more information about the fields in these pages, see [Device Group Properties Page, page A-35](#) or [Device Properties Page, page A-7](#).
 - c. Click **Save**.
-

Related Topics

- [Adding Devices to the Device Inventory, page 4-3](#)
- [Adding a Single Device, page 4-5](#)
- [Importing Devices from a Device Inventory CSV File, page 4-6](#)
- [Updating Device Access Parameters from RME, page 4-23](#)
- [Using QPM Tables, page 3-8](#)
- [Troubleshooting Device Management Problems, page 11-7](#)

Viewing Device Discovery Status

When you import devices, you can use the Discovery Status report to see the status of each device discovery task (for example, tasks can be finished, in progress, or failed because of incorrect device access parameters).

You can define the refresh interval for this page.

If you add more devices while the previous add device operation is still in progress, the Discovery Status page will display a separate record for each add operation, in order from newest to oldest.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
 - Step 2** Select **Discovery Status** from the TOC. The Discovery Status page appears.
 - Step 3** Do the following in the Discovery Status page:
 - a. View the status of active device discovery operations. For information about this page, see [Discovery Status Page, page A-29](#).
 - b. Optionally, you can select a different refresh interval from the list box below the table.
-

Related Topics

- [Adding Devices to the Device Inventory, page 4-3](#)
- [Using QPM Tables, page 3-8](#)
- [Troubleshooting Device Management Problems, page 11-7](#)

Working with Devices

The following topics describe working with devices:

- [Viewing and Editing Device Properties, page 4-15](#)
- [Setting Device Policy Groups Assignments, page 4-18](#)
- [Rediscovering Device Information, page 4-19](#)

Viewing and Editing Device Properties

You can view a device's properties and edit some of them. Examples of the properties you can edit include:

- Device role assignment
- Device folder assignment
- Device access parameters (passwords and community strings)

You can view and edit device properties from any device list, whether it is in the main device table, or accessed from the device folders, device groups, or search results pages.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** In the Device Table page, do one of the following to select the device to edit:
- Click the device name in the Sys Name column.
 - Select the check box next to the device name, then click **Edit**.
- The Device Properties page appears.
- Step 3** Do the following in the Device Properties page:
- a. Edit any of the device properties that are available for editing. For more information about the fields in this page, see [Device Properties Page, page A-7](#).
 - b. Click **Save**.
-

Related Topics

The following topics describe other tasks you can perform on devices:

- [Exporting Device Information, page 4-16](#)
- [Connecting to a Device Using Telnet, page 4-16](#)
- [Viewing Device Configuration, page 4-17](#)

Exporting Device Information

You can export a device's information to a file on your client system that can then be used to import the device back into QPM as a virtual device. This process allows you to test and demonstrate QoS policies without affecting real devices.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** In the Device Table page, do one of the following to select the device to edit:
- Click the device name in the Sys Name column.
 - Select the check box next to the device name, then click **Edit**.
- The Device Properties page appears.
- Step 3** In the Device Properties page, click **Export**.
The browser file download process begins.
- Step 4** Use the browser file download process to save the file to your client system.
-

Related Topics

- [Importing Virtual Devices, page 4-10](#)
- [Using QPM Tables, page 3-8](#)

Connecting to a Device Using Telnet

You can connect to a device in the device inventory from within QPM using Telnet. QPM starts the default Telnet program on your client system and automatically connects to the device. If there is no Telnet program installed on your client system, this feature will not work.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** In the Device Table page, do one of the following to select the device to edit:
- Click the device name in the Sys Name column.
 - Select the check box next to the device name, then click **Edit**.

The Device Properties page appears.

- Step 3** Click **Telnet**.

A Telnet application opens and connects to the device.

Related Topics

- [Using QPM Tables, page 3-8](#)
- [Troubleshooting Device Management Problems, page 11-7](#)

Viewing Device Configuration

You can view a device's running software configuration from within QPM. This is useful if you are deciding whether to upload the device's configuration into the QPM inventory.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** In the Device Table page, do one of the following to select the device to edit:
- Click the device name in the Sys Name column.
 - Select the check box next to the device name, then click **Edit**.

The Device Properties page appears.

- Step 3** Click **Show run**. The Display show run report appears, displaying the device's running configuration.
-

Related Topics

- [Using QPM Tables, page 3-8](#)

Setting Device Policy Groups Assignments

To configure QoS policies on a device, you assign it to a policy group. You can do this in the following ways:

- By accessing a policy group's properties and assigning the device to the policy group. For more information, see [Setting Network Element Assignments, page 6-13](#).
- By accessing a device's properties and assigning it to a policy group. The following procedure describes this process.

This procedure describes how to:

- Assign devices to policy groups.
- Remove devices from policy groups.
- Change device policy group assignment.

Procedure

-
- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select the check box next to the devices you want to add to or remove from a policy group, then click **Set Policy Group**.
The Policy Group Assignment dialog box opens.
- Step 3** Do the following in the Policy Group Assignment dialog box:
- a. Set and remove policy group assignments. For information about the fields in this page, see [Policy Group Assignment Dialog Box, page A-6](#).
 - b. Click **OK** to save the policy group assignment changes you have made and close the dialog box.
-

Related Topics

- [Setting Network Element Policy Group Assignments, page 4-26](#)
- [Using QPM Tables, page 3-8](#)

Rediscovering Device Information

Rediscovering a device's information causes QPM to connect to the device on the network and obtain its device information again. You should do this when you make configuration changes to a device to ensure that the device can still support the policies and configurations you assigned to it using QPM.

During the rediscover process, QPM will delete any policy group device or network element assignments that are no longer valid because of changes to the device's information. A report of deleted policy group assignments is generated. For more information see [Assignment Conflicts Reports Page, page D-34](#).

Procedure

-
- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select the check boxes next to the devices you want to rediscover, then click **Rediscover**.
- The Device Table page refreshes. The rediscovery status is displayed in the Status column.
- Step 3** Run the Assignments report by selecting **Reports > Conflicts > Assignments** to see if any policy group assignments were deleted as a result of the rediscovery.
- For more information, see [Assignment Conflicts Reports Page, page D-34](#).
-

Related Topics

- [Updating Device Access Parameters from RME, page 4-23](#)
- [Using QPM Tables, page 3-8](#)
- [Troubleshooting Device Management Problems, page 11-7](#)

Working with Device Folders

You can create device folders to organize the inventory for administrative purposes. For example, you might create a device folder for each building on your corporate campus and assign the devices in each building to their corresponding device folder.

Device folders are contained within device groups. If you are not using ACS and multiple device groups, all device folders are contained within the default device group.

Unlike device groups, you cannot assign access privileges to device folders. Device folders are used primarily to group devices into related groups for the purpose of more easily searching for devices and filtering and sorting lists of devices.

When you use the device folders table to browse device folders, you can perform the same actions on the listed devices that you can perform from the device table. See [Working with Devices, page 4-14](#), for more information about these actions.

The following topics describe how to work with device folders:

- [Creating Device Folders, page 4-20](#)
- [Organizing Devices with Device Folders, page 4-21](#)
- [Editing Device Folders, page 4-22](#)
- [Deleting Device Folders, page 4-22](#)

Creating Device Folders

Create device folders to organize your inventory.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Device Folders** in the TOC. The Device Folders page appears.
- Step 3** Click **Create**. The Device Folder Properties page appears.

- Step 4** Do the following in the Device Folder Properties page:
- a. Create the new device folder. For more information about the fields in this page, see [Device Folder Properties Page, page A-39](#).
 - b. Click **Save**.
- The Device Folders page appears. The new device folder appears in the table.
-

Related Topics

- [Working with Device Folders, page 4-20](#)

Organizing Devices with Device Folders

You can use device folders to organize your inventory. The procedure describes how to add devices to device folders, remove devices from devices folders, and move devices between device folders.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select the check box next to the devices you want to assign to or remove from a device folder, then click **Set Device Folder**. The Device Folders Assignment dialog box opens.
- Step 3** Do the following in the Device Folders Assignment dialog box:
- a. Set and remove device folder assignments. For more information about the fields in this page, see [Device Folder Properties Page, page A-39](#).
 - b. Click **OK** to save the policy group assignment changes you have made and close the dialog box.
-

Related Topics

- [Working with Device Folders, page 4-20](#)
- [Using QPM Tables, page 3-8](#)

Editing Device Folders

Edit a device folder to change properties such as its name and description.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Device Folders** in the TOC. The Device Folders page appears.
- Step 3** Do one of the following to select a device folder:
- Click the name of the device folder.
 - Select the check box next to a device folder name, then click **Edit**.
- The Device Folder Properties page appears.
- Step 4** Do the following in the Device Folder Properties page:
- a. Edit the device folder. For more information about the fields in this page, see [Device Folder Properties Page, page A-39](#).
 - b. Click **Save**.
-

Related Topics

- [Working with Device Folders, page 4-20](#)
- [Using QPM Tables, page 3-8](#)

Deleting Device Folders

Delete a device folder when you no longer want to use it to organize your inventory. Devices assigned to the device folder are not deleted from the inventory, and are no longer assigned to any device folder.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Device Folders** in the TOC. The Device Folders page appears.

- Step 3** Select the check box next to the device folders you want to remove, then click **Delete**.

The Device Folders page refreshes. The deleted device folders do not appear in the table.

Related Topics

- [Working with Device Folders, page 4-20](#)
- [Using QPM Tables, page 3-8](#)

Using Additional Device Functions

The following topics document the additional device functions that are available:

- [Updating Device Access Parameters from RME, page 4-23](#)
- [Importing Device Roles, page 4-24](#)

Updating Device Access Parameters from RME

You can update device access parameters in the device inventory with device access parameters from RME. This is a convenient way to update the device inventory when device access parameters change.

Procedure

- Step 1** Select **Devices > Options**. The Update Passwords (RME) page appears.
- Step 2** Enter information about the RME server in the page. For more information about these fields, see [Update Passwords \(RME\) Page, page A-62](#).
- Step 3** Select the check box next to the devices you want to update, then click **Update Passwords**.
-

Related Topics

- [Using QPM Tables, page 3-8](#)

Importing Device Roles

A device role is a device property that specifies the network point for a device in the AVVID network. For example, a device role might identify a device as campus access, campus distribution, or WAN aggregation. Device roles are used by the IP telephony wizard to help automatically identify which interfaces should be assigned to which policies. You can import device roles from a file generated by an application that manages device roles.

Procedure

-
- Step 1** Select **Devices > Options > Import Device Roles**. The Import Device Roles page appears.
 - Step 2** Enter the path to the file from which you want to import device roles in the File field, or click **Browse** and browse to the file.
 - Step 3** Click **Import**.
-

Removing Devices

If you no longer want to manage QoS on a device, you can remove it from the inventory. When you remove a device, all of its elements are also removed.

Removing Devices That Are Being Monitored

If you remove a device that contains network elements that are being monitored by a QoS analysis task, QPM continues to monitor these network elements. To stop QPM from monitoring these network elements, you must stop or delete the QoS analysis task. For more information, see the following topics:

- [Performing Historical QoS Analysis, page 9-7](#)
- [Performing Real-Time QoS Analysis, page 9-18](#)

Procedure

-
- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select the check box next to the devices you want to remove, then click **Delete**. The Device Table refreshes, with the deleted devices removed.
-

Related Topics

- [Using QPM Tables, page 3-8](#)

Working with Network Elements

The following topics describe how to work with network elements:

- [Overview of Network Elements, page 4-25](#)
- [Viewing and Editing Network Element Properties, page 4-26](#)
- [Setting Network Element Policy Group Assignments, page 4-26](#)
- [Working with Source-Destination Pairs, page 4-28](#)
- [Hiding and Displaying Interfaces, page 4-31](#)

Overview of Network Elements

QPM supports both physical and logical network elements. A physical network element physically exists on a device and can be read or calculated using SNMP and Telnet. Examples include device, interface, VLAN, DLCI, and VC.

A user-supplied element is one that does not exist on a device, and its purpose is helping you manage your network elements. An example is source-destination pairs.

The interfaces on a device carry the network traffic. In QPM, the term interfaces refers to router interfaces and subinterfaces, and switch ports. QPM allows you to configure QoS on subinterfaces.

Viewing and Editing Network Element Properties

You can view and change network element properties. An example of the network element properties that you can edit is whether interfaces are ignored (hidden from display in QPM).

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
 - Step 2** Click the Interfaces icon in the table row of the device that contains the network element or elements that you want to view or edit. The Interfaces page appears.
 - Step 3** Click an interface name to edit it. The Interface Properties page appears.
 - Step 4** In the Interface Properties page:
 - a. Edit the interface properties if desired. For more information about the fields in this page, see [Interfaces Page, page A-15](#).
 - b. Click **Save**.
-

Related Topics

- [Hiding and Displaying Interfaces, page 4-31](#)
- [Using QPM Tables, page 3-8](#)

Setting Network Element Policy Group Assignments

To configure QoS policies on the network, you assign network elements to policy groups. You can do this in the following ways:

- By accessing a policy group's properties and assigning network elements to the policy group. For more information, see [Setting Network Element Assignments, page 6-13](#).
- By accessing a devices's network elements and assigning them to policy groups. The following procedure describes this method.

There are four types of network elements that you can assign to policy groups:

- Devices—See [Setting Device Policy Groups Assignments](#), page 4-18.
- Interfaces.
- Interface subelements (VCs and DLCIs).
- User-supplied elements (VLANs and source-destination pairs).

The following procedure describes how to do the following to interfaces, interface subelements, and user-supplied elements:

- Assign them to policy groups.
- Remove them from policy groups.
- Change policy group assignments.

You only need to perform the steps required for the network element types you are working with.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Click the Interfaces icon in the table row of a device that contains network element or elements that you want to assign. The Interfaces page appears.
- Step 3** Assign interfaces to policy groups, remove interfaces from policy groups, and change interface policy group assignments:
- a. Select the check box next to the interfaces you want to assign to or remove from a policy group, then click **Set Policy Group**. The Policy Group Assignment dialog box opens.
 - b. Set and remove policy group assignments. For more information about the fields in this page, see [Policy Group Assignment Dialog Box](#), page A-6.
- Step 4** Assign subelements of an interface to policy groups, remove subelements of an interface from policy groups, and change subelements of an interface policy group assignments:
- a. Click the name of an interface. The Interface Properties page appears.
 - b. Select any subelements of the interface (click the arrow icons to open or close the page subsections) that you want to assign, then click **Set Policy Group**. The Policy Group Assignment dialog box opens.

- c. Set and remove policy group assignments. For more information about the fields in this page, see [Policy Group Assignment Dialog Box, page A-6](#).
 - Step 5 Assign source-destination pairs and VLANs to policy groups, remove source-destination pairs and VLANs from policy groups, and change source-destination pairs and VLANs policy group assignments:
 - a. Click **Source-Dest Pairs** or **VLANs** in the TOC.
 - b. In the resulting page, select the source-destination pairs or VLANs that you want to assign, then click Set Policy Group. The Policy Group Assignment dialog box opens.
 - c. Set and remove policy group assignments. For more information about the fields in this page, see [Policy Group Assignment Dialog Box, page A-6](#).
-

Related Topics

- [Setting Device Policy Groups Assignments, page 4-18](#)
- [Using QPM Tables, page 3-8](#)

Working with Source-Destination Pairs

Source-destination pairs are logical (not physical) user-supplied network elements. You define them for Catalyst 8400 and Catalyst 8500 switches, which have QoS features that allow you to configure QoS policies to inbound and outbound traffic on the same device. To do this, you must define source-destination pairs of interfaces on a device, to which you can apply this type of QoS policy.

The following topics describe how to work with source-destination pairs using QPM:

- [Creating Source-Destination Pairs, page 4-29](#)
- [Editing Source-Destination Pairs, page 4-29](#)
- [Deleting Source-Destination Pairs, page 4-30](#)
- [Setting Network Element Policy Group Assignments, page 4-26](#)

Creating Source-Destination Pairs

You can create source-destination pairs using QPM.

Procedure

- Step 1** Choose **Devices > Manage**. The Device Table page appears.
 - Step 2** Click the device name of the device on which you want to create a source-destination pair. The Device Properties page appears.
 - Step 3** Click **Source-Dest Pair** in the TOC (a subentry of Device Information). The Source-Dest Pairs page appears.
 - Step 4** Click **Create**. The Source-Dest Pairs Properties page appears.
 - Step 5** Do the following in the Source-Dest Pairs Properties page:
 - a.** Create a source-destination pair. For more information about the fields in this page, see [Source-Dest Pair Properties Page, page A-20](#).
 - b.** Click **Save**.
-

Related Topics

- [Working with Source-Destination Pairs, page 4-28](#)
- [Using QPM Tables, page 3-8](#)

Editing Source-Destination Pairs

You can edit source-destination pairs using QPM.

Procedure

- Step 1** Choose **Devices > Manage**. The Device Table page appears.
- Step 2** Click the device name of the device on which you want to edit a source-destination pair. The Device Properties page appears.
- Step 3** Click **Source-Dest Pair** in the TOC (a subentry of Device Information). The Source-Dest Pairs page appears.

- Step 4** Select the check box next to the source-destination pair you want to edit, then click **Edit**. The Source-Dest Pairs Properties page appears.
- Step 5** Do the following in the Source-Dest Pairs Properties page:
- Edit the source-destination pair. For more information about the fields in this page, see [Source-Dest Pair Properties Page, page A-20](#).
 - Click **Save**.
-

Related Topics

- [Working with Source-Destination Pairs, page 4-28](#)
- [Using QPM Tables, page 3-8](#)

Deleting Source-Destination Pairs

You can delete source-destination pairs using QPM.

Procedure

- Step 1** Choose **Devices > Manage**. The Device Table page appears.
- Step 2** Click the device name of the device on which you want to delete a source-destination pair. The Device Properties page appears.
- Step 3** Click **Source-Dest Pair** in the TOC (a subentry of Device Information). The Source-Dest Pairs page appears.
- Step 4** Select the check box next to the source-destination pairs you want to delete, then click **Delete**.
-

Related Topics

- [Working with Source-Destination Pairs, page 4-28](#)
- [Using QPM Tables, page 3-8](#)

Hiding and Displaying Interfaces

When you import a device, QPM discovers and imports all of its elements that QPM supports. You can prevent interfaces (not other network elements) from being displayed in QPM by marking them as ignored. You can later redisplay interfaces if you want to see them again. DLCIs and VCs on ignored interfaces are also ignored.

The following topics describe hiding and displaying interfaces:

- [Hiding Interfaces, page 4-31.](#)
- [Displaying Interfaces, page 4-32.](#)

Hiding Interfaces

You can mark interfaces as ignored, preventing them from displaying in QPM.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Click the name of the device that contains the interfaces you want to ignore. The Device Properties page appears.
- Step 3** Select **Interfaces** in the TOC (a subentry of Device Information). The Interfaces page appears.
- Step 4** Select the check box next to the interfaces you want to ignore, then click **Mark as Ignore**. A confirmation dialog box opens.
- Step 5** Click **Yes** in the confirmation dialog box.

The Interfaces page refreshes. The ignored interfaces are no longer displayed.

Related Topics

- [Hiding and Displaying Interfaces, page 4-31](#)
- [Displaying Interfaces, page 4-32](#)
- [Using QPM Tables, page 3-8](#)

Displaying Interfaces

You can redisplay interfaces that you previously marked as ignored.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
 - Step 2** Click the name of the device that contains the interfaces you want to unignore. The Device Properties page appears.
 - Step 3** Click the hyperlinked number in the Ignored Interfaces field. The Ignored Interfaces List dialog box opens.
 - Step 4** Select the check box next to the interfaces you want to unignore, then click **Cancel Ignore**.
 - Step 5** Click **Close** to close the dialog box.
-

Related Topics

- [Hiding and Displaying Interfaces, page 4-31](#)
- [Hiding Interfaces, page 4-31](#)
- [Using QPM Tables, page 3-8](#)

Searching for Devices and Network Elements

You can search the inventory to find devices and network elements that meet criteria that you specify.

The search criteria are divided into two categories:

- Network element criteria—Based on qualities of the network element. For example, you can search for all devices that are running Cisco IOS version 12.0, or all interfaces that have ATM VCs configured on them.
- Assignment criteria—Based on the network element policy group assignment. For example, you can search for all devices that are assigned to a particular policy group.

You can create multiple search criteria. You specify whether the search results must match all of the criteria statements (logical AND) or any of them (logical OR).

You can display the search criteria you have configured as a sentence, allowing you to more easily verify that the search will produce the results you want.

The devices and elements that match the search criteria are displayed in tables that allow you to perform all the tasks that QPM provides on these network elements.

Procedure

- Step 1** Select **Devices > Search**. The Search For Devices page appears.
- Step 2** If you want to search for a network element other than a device, select that network element in the TOC. The search page for that network element type appears.
- Step 3** Enter search criteria using the page fields. For information about these fields, see the UI reference for the type of network element you are searching for:
- [Search for Devices Page, page A-40](#)
 - [Search for Interfaces Page, page A-45](#)
 - [Search for VLANs Page, page A-49](#)
 - [Search for VCs Page, page A-52](#)
 - [Search for DLCIs Page, page A-55](#)
 - [Search for Source-Dest Pairs Page, page A-58](#)
- Step 4** To see the search criteria expressed as a sentence, click **Refresh Summary**. The summary field refreshes.
- Step 5** To clear all search criteria, click **Reset**.
- Step 6** To run the search, click **Search Now**. A results page appears.
- For information about the results page, see the UI reference for the type of network element you are searching for:
- [Devices Search Result Page, page A-43](#)
 - [Interfaces Search Result Page, page A-48](#)
 - [VLANs Search Result Page, page A-51](#)
 - [VCs Search Result Page, page A-55](#)

- [DLCIs Search Result Page, page A-58](#)
 - [Source-Dest Pairs Search Result Page, page A-61](#)
-

Related Topics

- [Using QPM Tables, page 3-8](#)

Working with Device Groups

This section is applicable only for users who use ACS permissions, and are working with ACS device groups. If you do not use ACS to create multiple device groups, only the default device group will be available in QPM.

The following topics describe how to work with device groups:

- [Understanding Device Groups, page 4-34](#)
- [Setting the Active Device Group, page 4-36](#)
- [Synchronizing Permissions and Device Group Information, page 4-36](#)
- [Editing Device Group Properties, page 4-37](#)
- [Deleting Device Groups from QPM, page 4-38](#)

Understanding Device Groups

Device groups are groups of devices (and their network elements) within the inventory. They are created and maintained in ACS, but QPM assigns some properties to each device group that you can view and edit in QPM. For more information, see [Editing Device Group Properties, page 4-37](#).

Each device group has its own set of access permissions, so they can be used to divide the network into administrative groups for purposes of controlling who can do what with which devices. Because you create policies in the context of a device group, you can assign policy groups only to devices in the same device group as the policy.

The inventory always contains one device group named the default device group. If you are not using ACS device groups to group devices, your inventory will contain only the default device group.

ACS Device Groups

If you are using multiple ACS device groups, QPM will automatically create the same device groups with the same user permissions that are defined in ACS. When you add a new device to the inventory, QPM assigns it to its ACS device group, with the same user permissions. If a device is not assigned to an ACS device group, it is assigned to the QPM default device group.

QPM automatically synchronizes the inventory with ACS in the following cases:

- When you import devices, QPM synchronizes with ACS to find out what device groups the devices belong to. Only the imported devices are synchronized with ACS.
- When you log into QPM, QPM automatically synchronizes with ACS to obtain and store your user permissions so it can check them before any user operations you attempt.

In addition, before you deploy a deployment job, QPM synchronizes with ACS to verify that the user permissions allow the job to proceed.

You can also manually refresh the QPM device group information, synchronizing it with ACS. See [Synchronizing Permissions and Device Group Information](#), page 4-36.



Note

If you are using ACS device groups, all devices used in QPM, including the QPM server, should be defined in ACS device groups, only as AAA clients, and not as AAA servers.

Related Topics

- [User Permissions](#), page 3-10

Setting the Active Device Group

Only one device group at a time can be active. Throughout the QPM user interface, only the devices, deployment groups, and policy groups that are contained in the active device group are displayed. You must have sufficient user privileges to set the active device group.

Procedure

- Step 1** Select **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Device Groups**. The Device Groups page appears.
- Step 3** Select the device group that you want to make active by selecting the check box next to its name, then click **Set Active**.
-

Related Topics

- [Using QPM Tables, page 3-8](#)

Synchronizing Permissions and Device Group Information

You can manually synchronize the user permissions and device group information in the inventory with ACS or CiscoWorks Common Services (depending on which you are using to administer device groups and user permissions).

Typically you would synchronize in the following cases:

- When you know changes have been made to the ACS or CiscoWorks Common Services device group assignments or access privileges.
- When your CiscoWorks user role has changed since you logged into QPM.

The Sync Privileges page displays your permissions to the QPM device groups on the system. If you know you have changed ACS privileges, or changed the device groups in ACS, you see whether the changes are reflected correctly on this page so you can determine if you need to synchronize to update your QPM permissions.

If changes are made to the QPM device groups as a result of the synchronization, the Conflicts Assignment report shows which devices have been moved from the current device group, and all policy group assignments for those devices and their network elements will be deleted.

**Note**

ACS and CiscoWorks Common Services device group and user permissions information is automatically synchronized each time you log into QPM.

Procedure

- Step 1** Select **Devices > Options**. The Update Passwords (RME) page appears.
- Step 2** Select **Sync Privileges** in the TOC. The Sync Privileges page appears.
- Step 3** Click **Sync**. QPM synchronizes the user and device group information, and opens a message box to tell you the status when finished.

Related Topic

- [Assignment Conflicts Reports Page, page D-34](#)
- [Troubleshooting Device Management Problems, page 11-7](#)

Editing Device Group Properties

Although you cannot change device group membership within QPM (you must make device group assignment changes in ACS), you can edit the device group properties that are unique to QPM.

Many of the device group properties are the same properties that QPM maintains for devices. These device group properties are assigned to all devices in the device group by default. You can override these defaults by entering different device properties for an individual device.

Examples of the device group properties that you can edit include:

- Description.
- Default device access parameters.
- Enabling/disabling NBAR port mapping.

Procedure

- Step 1** Click **Devices > Manage**. The Device Table page appears.
- Step 2** Select **Device Groups** from the TOC. The Device Groups page appears.
- Step 3** Click the name of the device group you want to edit. The Device Group Properties page appears.
- Step 4** Do the following in the Device Group Properties page:
- a. Edit the device group. For more information about the fields in this page, see [Device Group Properties Page, page A-35](#).
 - b. Click **Save**.
-

Related Topics

- [Using QPM Tables, page 3-8](#)
- [Viewing and Editing Device Properties, page 4-15](#)

Deleting Device Groups from QPM

QPM device groups are not automatically deleted from QPM when you delete them in ACS, even when you synchronize device group information with ACS. Instead, you must manually delete QPM device groups. Any deployment groups and policy groups contained in the device group are also deleted.

This feature is useful because device groups are not automatically deleted from QPM when you delete them in ACS, even when you synchronize device group information with ACS. This gives you the opportunity to edit your QPM deployment groups and policy groups before manually deleting the device group.

The following are the restrictions for deleting QPM device groups:

- You cannot delete the QPM default device group.
- You cannot delete a device group that still contains devices. To delete a device group, you must first do one of the following:
 - Remove all devices from the device group in ACS.
 - Delete all devices in the device group from the QPM inventory.

If you convert from using ACS to CiscoWorks Common Services for device management and user authentication, all devices in the inventory are moved to the default device group (because CiscoWorks Common Services does not support multiple device groups). You can then delete the remaining empty device groups.

Procedure

-
- Step 1** Click **Devices > Manage**. The Device Table page appears.
 - Step 2** Select **Device Groups** from the TOC. The Device Groups page appears.
 - Step 3** Select the radio button next to the device group you want to delete.
 - Step 4** Click **Delete**.
-

