Deploying QoS Policies

After you have defined your QoS policies and assigned them to network elements, you can deploy the policies to the network devices.

The following topics describe policy deployment and the tasks associated with the deployment of QoS policies:

Understanding Policy Deployment

QPM deploys the QoS policies in a deployment group to your network devices. You can deploy an entire deployment group, or you can specify a subset of devices within a selected deployment group to which QPM will deploy the appropriate QoS policies. Each deployment event is called a "job."

Note You can only deploy QoS policies to devices in the network if the devices are real. If you are using virtual devices, you will not be able to deploy your policies to the network.

When you deploy your QoS policies to network devices, QPM translates the policies into device commands and enters the commands through the device's command line interface (CLI). You can choose to deploy your QoS configurations directly to network devices using Telnet. QPM automatically deploys your QoS configurations to configuration files. This deployment process does not configure the devices but generates configuration files that can be sent manually to the devices. QoS configurations can be deployed to the device using any application that downloads configuration files to the devices. QPM allows you to monitor the deployment process in real-time, viewing the active deployment jobs and their status.

Through QPM, you can verify the device configuration to ensure that your deployment group policy definitions match the actual device configurations, and preview the commands that will be used to configure the devices.

Upon deployment of a job, a read-only copy of the current deployment group is automatically made. This allows you to continue editing the deployment group, and also provides a historical version of it.

QPM allows you to restore, as the current editable deployment group, a previous version of a deployment group that was already deployed to the network. You can restore a deployment group for editing without deploying it, or you can restore and redeploy the deployment group. This feature is very useful when unexpected errors occur as a result of a deployment and you must go back to a previous version of the deployment group.

QPM maintains a history of deployments and their status results. This history allows you to view the deployment groups deployed and the deployment status results. QPM also provides static job reports that display the statuses of the devices in the deployment.

Note You can also trigger the deployment process from an application that is external to QPM, by issuing an HTTPS request.

Related Topics

- Deploying Policies and QoS Configurations, page 7-3
- Viewing the Deployment Status, page 7-10
- Managing Historical Versions, page 7-14
- Previewing the CLI Commands, page 7-23
- Verifying Device Configuration, page 7-29
- Deploying Jobs from an External Trigger, page 7-35

Deploying Policies and QoS Configurations

QPM provides options for deploying policies and QoS configurations to network devices. Using the Deployment wizard, you can deploy a current or historical version of a deployment group. If a deployment job fails, you can redeploy it to some or all of its failed devices.

The Deployment wizard guides you through the steps required for deploying a deployment group. You select your deployment group, enter the job details and select the deployment options. The wizard gathers and validates all the information that you enter, and allows you to view a summary of the job information. You can confirm or edit this information before deploying.

The following sections describe the step-by-step procedures for creating a deployment job, using the Deployment wizard.

The following topics describe the steps of the wizard:

- Step 1: Selecting a Deployment Group for Deployment, page 7-4
- Step 2: Validating the Historical Deployment Group, page 7-5
- Step 3: Selecting and Previewing the Devices for Deployment, page 7-7
- Step 4: Entering the Job Details for Deployment, page 7-8
- Step 5: Confirming the Wizard Information for Deployment, page 7-9

Related Topics

- Using QPM Wizards, page 3-9

Step 1: Selecting a Deployment Group for Deployment

The first step in the deployment process is to select the deployment group to be deployed. While the default is to select one of the currently managed deployment groups, you can select a historical version of a deployment group that was deployed.

Note If deployment was activated from the IP Telephony wizard, the first page of the wizard—Deployment Group Selection, does not display. In this case, the Device Selection and Preview page automatically appears.

If you select a historical version of a deployment group, it is restored as the current deployment group for editing. The existing current deployment group is saved as a historical version.

Procedure

Step 1 Select **Deploy > Deployment**. The first step of the Deployment wizard is displayed—Deployment Group Selection.

Step 2 Choose the type of deployment group (current or historical), by selecting the Current version of a deployment group or Restore a previous version of a deployment group radio button.

Step 3 Select the deployment group:

- If you are deploying a current deployment group, select the deployment group name from the list.

  To view the details (Owner, Creation Time) of all the deployment groups before making your selection:

  – Click the View list link. The Deployment Groups List page appears, displaying all the currently managed deployment groups. For more information about this page, see Deployment Groups List Page, page C-3.

  – Select the required deployment group and click **Select**.

The selected deployment group name will be displayed in the Deployment Group list in the first page of the wizard.

- If you are deploying a historical deployment group, select the deployment group name from the list.

  To view the details (Version, Job, Owner, Creation Time) of all the historical deployment groups before making your selection:

  - Click the View list link. The Job History List page appears, displaying all the historical deployment groups. For more information about this page, see Job History List Page, page C-4.
  - Select the required deployment group and click **Restore**.

  The selected deployment group name will be displayed in the Deployment Group list in the first page of the wizard.

Step 4 Click **Next** to move to the next step of the wizard:

- If you selected to deploy a current deployment group, the next step of the wizard is to select your devices.
- If you selected to deploy a historical version of a deployment group, the next step of the wizard is to validate the deployment group.

Related Topics

- Step 2: Validating the Historical Deployment Group, page 7-5
- Step 3: Selecting and Previewing the Devices for Deployment, page 7-7
- Managing Historical Versions, page 7-14

Step 2: Validating the Historical Deployment Group

Note This step of the wizard is only available if you selected to deploy a historical version of a deployment group.

Whenever a previous version of a deployment group is restored, validation checks must be done on the deployment group. The validation process is automatically activated after selecting a historical deployment group and clicking the Next button in Step 1: Selecting a Deployment Group for Deployment.

The system does the following checks and automatically provides a report of violations, where relevant:

- Missing Network Elements—This validation procedure checks for the coordination of policies and managed devices. If the validation procedure detects network elements that are missing from the current device group, they will be displayed in the report. The assignments of policies to these network elements in the restored deployment group will be automatically removed.
- Invalid Assignments—This validation procedure checks for assigned network elements that no longer match the constraints of their policy groups. Any invalid assignments will be displayed in the report. The network elements will be removed from the assignment.
- Reusable Components Violations—This validation procedure checks for the coordination of policies and library components (IP aliases, application aliases and policy group templates). If the validation process detects some library components in the restored version that are different than the ones in the current libraries, this will be displayed. The validation process overrides the current library components with the original ones and adds them locally to the deployment group. In this case, the dynamic link to the library components will no longer exist.
- Constraints Violations—This check validates the policy group device constraints against the predefined constraints limitations. These limitations might change from time to time causing some of the policy group constraints to be invalid. Policy groups that are invalid will be displayed and removed along with their assignments.

Procedure

Step 1 In the Deployment Group Validate Historical page, click the View Restore Validation Report button.

The Restore Validation Report window opens, displaying any validation violations that were discovered during the deployment group restore procedure.

For more information about this window, see Restore Validation Report Window, page C-5.

Step 2 After you have finished viewing the report, close the window.

Step 3 Click **Next** or **Finish** to accept any changes made as a result of the validation checks, and move to the next step of the wizard.

Step 4 To stop the deployment without saving any changes, click **Cancel**.

Related Topics

- Step 3: Selecting and Previewing the Devices for Deployment, page 7-7
- Managing Historical Versions, page 7-14

Step 3: Selecting and Previewing the Devices for Deployment

Note If you are deploying a deployment group from the IP Telephony wizard, the Deployment wizard will open automatically on this page.

In this step of the wizard, you select the devices to which you want to deploy your policies. You can also preview the CLI commands that will be configured on your devices prior to deployment. This page displays a list of all the devices that are available for deployment and their configurations. Devices whose configurations have changed since the last deployment will be displayed with the check boxes alongside them selected. You can accept the default selection, or you can make your own selection of devices.

Procedure

Step 1 In the Device Selection and Preview page, select the check boxes alongside the devices to which you want to deploy your policies. Deselect those you do not want to deploy to.

Step 2 To preview the CLI configuration commands for a device:

a. Click its Policy Configuration link in the table. A preview window opens, displaying the following configuration details for the device:

- Backup ShowRun configuration commands.
- Incremental Telnet script commands to be written (if deploying directly to network devices).

b. Click the appropriate buttons to view the relevant configuration details.

c. After you have finished previewing the device's configuration, click **Close** to close the Preview window.

Step 3 Click **Next** to move to the next step of the wizard.

Related Topics

- Previewing the CLI Commands, page 7-23
- Deployment Wizard - Device Selection and Preview Page, page C-7
- Device Configuration Preview Window, page C-9
- Step 4: Entering the Job Details for Deployment, page 7-8

Step 4: Entering the Job Details for Deployment

In this step of the wizard, you enter a name (a default name is provided) and, optionally, a description for the job you want to deploy.

In this page, you must also select if you want to deploy the configuration to the devices using Telnet. This option triggers actual deployment of the deployment group to the devices.

QPM also deploys the QoS configurations to files. This process does not configure the devices, but generates configuration files that can be sent manually to the device. Individual files are created per device and the complete set of files can be saved to your hard disk. When required, you can download these files as a single zip file to your desktop, by clicking the Files icon in the Job History report.

Procedure

Step 1 In the Job Details page, enter a name for your job (or accept the default).

Step 2 If required, you can enter a description of the job in the Job Description field.

Step 3 Select/deselect the check box depending on whether you want to deploy configuration to the devices using Telnet. (The default is selected.)

Step 4 Click **Next** to move to the final step of the wizard.

Related Topics

- Restoring and Deploying a Historical Deployment Group, page 7-15
- Step 5: Confirming the Wizard Information for Deployment, page 7-9
- Downloading a Historical Job's Configuration Files, page 7-18

Step 5: Confirming the Wizard Information for Deployment

The last page of the Deployment wizard presents a summary of all the data collected through the Deployment wizard for you to verify. After you are satisfied with the job information, you can deploy the deployment group to the network.

Caution Jobs are not necessarily deployed to devices in the order in which they are triggered. Avoid deploying several jobs to the same device simultaneously. This could result in the incorrect configuration of the device.

Procedure

Step 1 Verify the job information displayed on the page. If you are not satisfied with any of the job details, you can go back through the wizard to make the required changes.

Step 2 After you are satisfied with the job information, click **Deploy** to deploy the deployment group to the network. The Active Jobs page appears, allowing you to view the deployment process.

Related Topics

- Step 4: Entering the Job Details for Deployment, page 7-8
- Viewing the Deployment Status, page 7-10

Viewing the Deployment Status

You can view the status of your job during deployment using the Active Jobs page. The Active Jobs page provides a dynamic view of all the active deployments and their status. For each deployment job, the start time of its configuration, its status, and a summary of the number of devices deployed according to their status, are displayed. The status of a job deployment or a device deployment might be Pending, In Progress, Completed, or Failed. A job deployment might also have the status of Aborted or Paused.

During the deployment process, a status of “In Progress” will be displayed for a job. When the job is completed successfully, its status will change to “Completed”. For a deployment job to be Completed, all the devices must be successfully configured. If the deployment of at least one device fails, and all the other devices passed without errors, the overall status of the deployment is Failed. Completed jobs are automatically removed from the display after ten minutes.

From the Active Jobs page, you can:

- View the deployment details of a job.
- Pause and resume the deployment process.
- Stop the deployment.

- Redeploy a failed deployment.
- Remove a deployment job from the display.

Procedure

Step 1 Select **Deploy > Jobs > Active Jobs**.

The Active Jobs page appears, displaying the currently active deployment jobs and their status, in a table.

Tip The display is automatically refreshed every ten seconds. To force a refresh manually, click **Refresh**.

For more information about the Active Jobs page, see Active Jobs Page, page C-12.

Note The Active Jobs page appears automatically when you click **Deploy** in the Summary page of the Deployment wizard (see Step 5: Confirming the Wizard Information for Deployment, page 7-9).

Step 2 View the status of the active job deployments and device deployments:

- To view the details of a deployment job, select its Job Name link in the table. The Job Details report appears.
- To remove a deployment job from the table, select it and click **Remove From Display**.

Related Topics

- Pausing and Resuming a Deployment Job, page 7-12
- Stopping a Deployment Job, page 7-12
- Redeploying a Job, page 7-13
- Viewing the Job Details Report, page 7-19
- Troubleshooting Deployment Problems, page 11-11

Pausing and Resuming a Deployment Job

You can pause a job during deployment. However, QPM will not stop the configuration of a device after it has begun. Any devices that are being configured when the Pause command is issued will be finished. Devices for which deployment had not yet begun will remain with the status Pending. You can also cause any paused deployment to resume configuration of devices. This does not create a new job—it continues the selected job.

Procedure

Step 1 Select **Deploy > Jobs > Active Jobs**. The Active Jobs page appears.

Step 2 In the Active Jobs list, select the check box next to your deployment job and click **Pause**. A message appears asking you if you are sure you want to pause the deployment of your job.

Step 3 Click **Yes** to pause the job's deployment.

Step 4 To resume the deployment of your job, select the check box next to the job and click **Resume**.

The deployment of the selected job will resume.

Related Topics

- Viewing the Deployment Status, page 7-10

Stopping a Deployment Job

You can stop a deployment job that is currently in progress or has been paused. This feature is useful if you want to change a job's configuration details before deploying it, or if a job becomes stuck while in progress. Terminating a job stops the configuration of the devices. All the devices that were In Progress or Pending will receive a Failed status. You cannot resume a stopped deployment job.

Procedure

Step 1 Select **Deploy > Jobs > Active Jobs**. The Active Jobs page appears.

Step 2 In the Active Jobs list, select the check box next to the deployment job (In Progress or Pending) that you want to stop, and click **Abort**.

A message appears warning you that the job will be aborted with no option to resume it.

Step 3 Click **Yes** to confirm the stop procedure. The job status for the selected deployment job will display "Aborted".

Related Topics

- Viewing the Deployment Status, page 7-10

Redeploying a Job

You can manually request that deployment be retried for either a specific device that failed or all failed devices in any displayed failed job. This does not create a new job—it creates another deployment for the job. The redeployment process resets the status of the selected devices and re-requests the deployment of the selected job.

Procedure

Step 1 Select **Deploy > Jobs > Active Jobs**. The Active Jobs page appears.

Step 2 In the Active Jobs table, select the check box next to the job you want to redeploy and click **Redeploy**. The Device Selection and Preview page of the Deployment wizard appears, displaying all the failed devices of the job. See Step 3: Selecting and Previewing the Devices for Deployment, page 7-7.

Step 3 Select the check boxes alongside the devices to which you want to deploy your policies. If required, preview the CLI commands that will be configured on your devices. Then click **Next**.

Step 4 Enter the job details and select the deployment options, and click **Next** (see Step 4: Entering the Job Details for Deployment, page 7-8).

Step 5 Verify the job information and click **Deploy** to redeploy your job to the network (see Step 5: Confirming the Wizard Information for Deployment, page 7-9).

Related Topics

- Viewing the Deployment Status, page 7-10

Managing Historical Versions

QPM allows you to restore previous versions of deployment groups that were deployed to the network, for editing and deploying. The Restore feature is very useful when unexpected errors occur as a result of the deployment of a deployment group and you must go back to a previous version of that deployment group. You can also view a historical version of a deployment group without restoring.

You can manage historical versions of deployment groups from the Job History report, which displays a table of historical deployment jobs and all their details.

From the Job History report, you can do the following:

- Restore a historical deployment group to edit and deploy it.
- View a historical deployment group's policy groups.
- Delete a historical job.
- Lock a job to prevent automatic deletion when the history cache is full, or release a job from being locked.
- Download the configuration files of a historical deployment job.
- View a Job Details report for each deployment job.
- View a Deployment History report for each deployment job.
- View the results of a DNS host name resolution check for a deployment job.

Procedure

Step 1 Select **Deploy > Jobs > Job History**. The Job History report appears.

For more information about the Job History report, see Job History Page, page C-14.

Step 2 Select the required historical report, and click the appropriate button or link depending on the procedure you want to do, as described in the following sections.

Related Topics

- Restoring and Deploying a Historical Deployment Group, page 7-15
- Viewing a Historical Deployment Group, page 7-17
- Deleting a Historical Job, page 7-17
- Locking and Unlocking a Historical Job, page 7-18
- Downloading a Historical Job's Configuration Files, page 7-18
- Viewing the Job Details Report, page 7-19
- Viewing the Deployment History Report, page 7-21
- Viewing the DNS Resolution, page 7-22

Restoring and Deploying a Historical Deployment Group

This topic describes how you can restore a previous version of a specific deployment group that was deployed to the network, for editing purposes. It also describes how to deploy the restored version, if required.

Note If required, you can view a history of all the deployment group restore operations, from the Restore Reports page. See Restore Reports Page, page D-42 for more information.

Procedure

Step 1 Select **Deploy > Jobs > Job History**. The Job History report appears.

Step 2 Select the historical job you want to restore, in the table.

Step 3 Click **Restore**.

Validation checks are automatically done on the deployment group. If the restore process detects any validation violations, the results will be written to a report. The Restore Deployment Group page appears, from which you can view the validation report.

For more information about this page, see Restore Deployment Group Page, page C-16.

Step 4 To view a validation report:

a. Click **Show Restore Report**. The Restore Validation Report window opens.

For more information about this window, see Restore Validation Report Window, page C-5.

b. When you have finished viewing the report, close the window.

Step 5 Click **OK** to confirm the Restore process, or **Cancel** to stop the process.

If you clicked OK, the restored version will be selected as the current editable deployment group. The Policy Groups page appears, displaying the policy groups for the current deployment group (see Modifying a Policy Group, page 6-20).

Step 6 If you want to deploy the restored version, follow the steps of the Deployment wizard (see Step 1: Selecting a Deployment Group for Deployment, page 7-4 through Step 5: Confirming the Wizard Information for Deployment, page 7-9).

Related Topics

- Step 2: Validating the Historical Deployment Group, page 7-5
- Managing Historical Versions, page 7-14
- Working with Policy Groups, page 6-2
- Deploying Policies and QoS Configurations, page 7-3

Viewing a Historical Deployment Group

If you want to verify the details of a historical version of a deployment job, QPM allows you to view its policy groups. You will not be able to make changes to the deployment group or deploy it to the network.

Note You can view only one historical deployment group at a time. The deployment group will not be saved. If you select another deployment group, you will lose the previous version you selected to view. To view it, you will have to select it again from the Job History report page.

Procedure

Step 1 Select **Deploy > Jobs > Job History**. The Job History report appears.

Step 2 Select the historical job in the table and click **View Deployment Group**.

The Policy Groups page appears in read-only mode, displaying the selected deployment group and its policy groups.

Related Topics

- Managing Historical Versions, page 7-14
- Working with Policy Groups, page 6-2

Deleting a Historical Job

You can delete historical jobs from the Job History report list.

Procedure

Step 1 Select **Deploy > Jobs > Job History**. The Job History report appears.

Step 2 Select the historical jobs you want to remove from the report, and click **Delete**.

A dialog box opens, warning you that the selected jobs will be deleted.

Step 3 Click **OK** to confirm the deletion. The jobs will be deleted from the list of historical jobs. You will no longer be able to restore them.

Related Topics

- Managing Historical Versions, page 7-14

Locking and Unlocking a Historical Job

The Job History report can display up to a predefined maximum number of jobs. When the history cache is full, the oldest historical jobs are automatically deleted. You can prevent this automatic deletion by "locking" a job. Similarly, you can "unlock" a historical version, making it available for deletion.

Procedure

Step 1 Select **Deploy > Jobs > Job History**. The Job History report appears.

Step 2 Select the historical job you want to prevent from automatic deletion, and click **Lock Job**. The Lock Job status of the job in the report will display **Lock**.

Step 3 To release a historical job from being locked from automatic deletion, select it and click **Unlock Job**. The Lock Job status of the job in the report will display **Unlock**.

Related Topics

- Managing Historical Versions, page 7-14

Downloading a Historical Job's Configuration Files

When QPM deploys QoS configurations to files, it generates configuration files that can be sent manually to the devices. Individual files are created for each device, and the complete set of files are saved as a single zip file to your hard disk.

From the Job History report, you can download to your desktop the zip file that contains the individual configuration files for each device in a historical deployment job that you select for editing.

Procedure

Step 1 Select **Deploy > Jobs > Job History**. The Job History report appears.

Step 2 Select the historical job whose configuration zip file you want to download, and click its Files icon. The File Download dialog box opens.

Step 3 Save the zip file to the required location on your desktop and extract the configuration files.

Related Topics

- Managing Historical Versions, page 7-14
- Step 4: Entering the Job Details for Deployment, page 7-8

Viewing the Job Details Report

The Job Details report shows the final status of all the deployments of a selected job. It can also show the current deployment status of a job that is still in progress.

Note The redeployment process can result in more than one deployment for a job (see Redeploying a Job, page 7-13).

The job's deployment details are displayed at the top of the page, and a table of all the devices related to the deployment is displayed below. From this report, you can view details about any errors or warnings that resulted from the deployment of a device. You can also view the CLI commands that were used to configure a device.

Note If the error message for a failed job displays "Internal error - unknown device state," some of the devices might be stuck in progress. In such a case, QPM will not be able to determine what was configured on these devices. You should contact technical support on the Cisco TAC web site to resolve this problem.

Procedure

Step 1 Select **Deploy > Jobs > Job History**. The Job History report appears.

Step 2 Click the Job Name link of the job whose details you want to view or click the Details icon for the job.

Note You can also open the Job Details page, by clicking the Job Name link for a job in the Active Jobs page, or by clicking the Job Name link for a device in the Managed Devices report.

The Job Details page appears, displaying the job's details and a table listing status information for each device in the job. For more information about the Job Details page, see Job Details Report Page, page C-17.

Step 3 To view details about an error or warning that resulted from the deployment of a device, click the Errors/Warnings link for the required device in the table. The Device Errors and Warnings page appears.

Step 4 To view the CLI commands that were used to configure a device:

a. Select the check box next to the required device in the table.

b. Click **View CLI Commands**.

A preview window opens, displaying the following configuration details for the device:

- Backup ShowRun configuration commands.
- Any incremental Telnet script commands that were written (if deployed directly to network devices).

c. Click the appropriate buttons to view the relevant configuration details.

d. Click **Close** to close the Preview window.

Related Topics

- Managing Historical Versions, page 7-14
- Viewing Device Deployment Errors and Warnings, page 7-21
- Viewing the Status of Devices, page 7-23

Viewing Device Deployment Errors and Warnings

In the Device Errors and Warnings page, you can view details about any errors or warnings that resulted from the deployment of a device. The page displays the reason for the error or warning message, and the time it occurred.

Procedure

Step 1 In the Job Details page, click the Errors/Warnings link for the device whose deployment error details you want to view. The Device Errors and Warnings page appears.

For more information about this page, see Device Errors and Warnings Page, page C-19.

Step 2 When you have finished viewing the error or warning messages, close the page.

Related Topics

- Viewing the Job Details Report, page 7-19

Viewing the Deployment History Report

The Deployment History report displays the deployment history details of a selected deployment.

Note The redeployment process can result in more than one deployment for a deployment job (see Redeploying a Job, page 7-13). A deployment history report shows only the devices that were configured in the selected deployment. These might not be all the devices in the deployment job.

Procedure

Step 1 Select **Deploy > Jobs > Job History**. The Job History report appears.

Step 2 Click the Deployments link of the job whose deployment details you want to view. The Deployment History report is displayed for the selected deployment.

For more information about the Deployment History report, see Deployment History Report Page, page C-19.

Step 3 To view the job details of the selected deployment, click the Deployment Type link. A Job Details report appears for the selected deployment.

Related Topics

- Managing Historical Versions, page 7-14
- Viewing the Job Details Report, page 7-19

Viewing the DNS Resolution

QPM resolves newly added host names to their IP addresses, to update any changes in the network. From the Job History report, you can view the results of a DNS resolution check done by QPM on the host names that QPM resolved to IP addresses, for a selected deployment job.

Procedure

Step 1 Select **Deploy > Jobs > Job History**. The Job History report appears.

Step 2 Select the historical job in the table and click **DNS Resolution**.

The DNS Resolution page appears, displaying a list of IP addresses to which the host names were resolved, for the selected deployment job.

For more information about the DNS Resolution page, see DNS Resolution Page, page C-17.

Related Topics

- Managing Historical Versions, page 7-14
- Creating a CLI Preview Job, page 7-24

Viewing the Status of Devices

The Managed Devices report allows you to view all the devices in the device group that were configured (deployed to) by QPM, and their statuses. You can also see which deployment jobs are responsible for them. From this report, you can view details about a device's deployment job and its status.

Procedure

Step 1 Select **Deploy > Jobs > Managed Devices**. The Managed Devices page appears.

For more information about the Managed Devices report, see Managed Devices Page, page C-20.

Step 2 To view details about the device's deployment job, click the Job Name link for the device. A Job Details report is displayed.

Related Topics

- Viewing the Job Details Report, page 7-19

Previewing the CLI Commands

QPM allows you to view in advance the CLI commands that will be sent to the devices upon deployment. You can create a CLI Preview job to view the commands for the current deployment group. You cannot create a CLI Preview job for a historical version. CLI previews are determined by querying the devices for their existing configuration and then calculating the incremental changes.

QPM provides several ways in which you can view the CLI commands that are already configured, or will be configured, on devices in your deployment group:

- Using the CLI Preview wizard, you can activate a CLI Preview job in which CLI commands are generated for all or some of the devices in a deployment group.
- During the deployment process, you can preview the CLI commands that will be configured on a single device, prior to deployment (see Step 3: Selecting and Previewing the Devices for Deployment, page 7-7).
- In the Job Details report, you can view the CLI commands that were configured on a selected device.
- In the Policy Translation page, you can view the CLI configuration of policies for a device (see Viewing Policy Translations, page 6-24).

Related Topics

- Viewing the Job Details Report, page 7-19
- Creating a CLI Preview Job, page 7-24
- Viewing the CLI Preview Jobs, page 7-27

Creating a CLI Preview Job

The CLI Preview wizard guides you through the steps required to create a new CLI Preview job, for all the devices in a deployment group.

The steps of the CLI Preview wizard are:

- Step 1: Selecting the Deployment Group for a CLI Preview Job, page 7-25
- Step 2: Previewing and Selecting the Devices for a CLI Preview Job, page 7-26
- Step 3: Confirming the Wizard Information for a CLI Preview Job, page 7-27

Related Topics

- Using QPM Wizards, page 3-9
- Previewing the CLI Commands, page 7-23

Step 1: Selecting the Deployment Group for a CLI Preview Job

In this step of the wizard, you select the deployment group that contains the devices whose CLI commands you want to preview. The deployment group must be one of those that are currently managed.

Procedure

Step 1 Select **Deploy > Previews**. The CLI Preview page appears.

Step 2 Click **New Preview**.

The CLI Preview wizard appears at the first page—Deployment Group Selection.

Step 3 Select the current deployment group from the list box.

To view the details (Owner, Creation Time) of all the current deployment groups, and then make your selection:

a. Click the View list link. The Deployment Groups List page appears.

b. Select the required deployment group and click **Select**.

The deployment group will appear selected in the Deployment Group Selection page of the wizard.

Step 4 Click **Next** to move to the next step of the wizard.

Related Topics

- Creating a CLI Preview Job, page 7-24
- Step 2: Previewing and Selecting the Devices for a CLI Preview Job, page 7-26

Step 2: Previewing and Selecting the Devices for a CLI Preview Job

In this step of the wizard, you select the devices and preview their configurations. This page displays a list of all the devices that are assigned to policy groups in the selected deployment group.

Procedure

Step 1 In the Device Selection and Preview page, select the check boxes alongside the devices whose configuration details you want to preview. By default, all the devices will be selected.

Step 2 To preview the CLI configuration commands for a device:

a. Click its Policy Configuration link.

A preview window opens, displaying the following configuration details for the device:

- Backup ShowRun configuration commands.
- Any incremental Telnet script commands that will be written (if deploying directly to network devices).

b. Click the appropriate buttons to view the relevant configuration details.

c. After you have finished previewing the device's configuration, click **Close** to close the Preview window.

Step 3 Click **Next** to move to the final step of the CLI Preview wizard.

Related Topics

- Creating a CLI Preview Job, page 7-24
- Step 3: Confirming the Wizard Information for a CLI Preview Job, page 7-27

Step 3: Confirming the Wizard Information for a CLI Preview Job

The last step of the CLI Preview wizard asks you to verify the deployment group name and the number of devices that were selected for previewing.

Procedure

Step 1 Verify the job information displayed on the page. If you are not satisfied with any of the job details, you can go back through the CLI Preview wizard to make the required changes.

Step 2 Click **Preview**. The CLI Preview page appears, allowing you to view the current CLI jobs that are being executed.

Related Topics

- Creating a CLI Preview Job, page 7-24
- Viewing the CLI Preview Jobs, page 7-27

Viewing the CLI Preview Jobs

The CLI Preview page displays a table of all the CLI Preview job requests that were created and those that are currently being executed. This page provides a dynamic view of all the CLI Preview jobs and their status. It also displays the time the last preview was initiated for a job, the job's status, and its owner. The status of a CLI Preview job may be Pending, In Progress, Completed, or Failed.

During the CLI Preview process, CLI commands are generated for all the devices in the deployment group. A status of "In Progress" will be displayed for a job during this process. When the job is completed successfully, its status will change to "Completed".

From the CLI Preview page, you can:

- Create a new CLI Preview job.
- View the details of a CLI Preview job. The CLI Preview Details report describes the details of a CLI Preview job. From this report, you can also view the CLI commands that were used to configure a device.

- View the results of a DNS host name resolution check for a selected CLI Preview job.
- Delete a CLI Preview job from the list.

Procedure

Step 1 Select **Deploy > Previews**. The CLI Preview page appears.

Note The CLI Preview page appears automatically when you click **Preview** in the last step of the CLI Preview wizard (see Step 3: Confirming the Wizard Information for a CLI Preview Job, page 7-27).

For more information about the CLI Preview page, see CLI Preview Page, page C-21.

Step 2 To create a new CLI Preview job, click **New Preview**. The CLI Preview wizard appears.

Step 3 To view the details of a CLI Preview job:

a. Select the CLI Preview job whose details you want to view, and click its Details icon or the View Preview Details button. The CLI Preview Details page appears.

For more information about the CLI Preview Details page, see CLI Preview Details Page, page C-25.

b. To view the CLI commands that were used to configure a device:

- Select the check box next to the required device in the table.
- Click **View CLI Commands**.
- A preview window opens, displaying the Backup ShowRun configuration commands and any incremental Telnet commands that were written to the device.
- Click the appropriate buttons to view the relevant configuration details.
- Click **Close** to close the Preview window.

Step 4 To view the results of a DNS host name resolution check, select the preview job and click **DNS Resolution**. The DNS Resolution page appears, displaying a list of IP addresses to which the host names were resolved, for the selected preview job.

For more information about the DNS Resolution page, see DNS Resolution Page, page C-17.

Step 5 To delete a CLI Preview jobs:

a. Select the jobs you want to remove from the list, and click **Delete**.

A dialog box opens, warning you that the selected jobs will be deleted.

b. Click **OK** to confirm the deletion. The jobs will be deleted from the list of CLI Preview jobs.

Related Topics

- Previewing the CLI Commands, page 7-23
- Creating a CLI Preview Job, page 7-24
- Viewing the DNS Resolution, page 7-22

Verifying Device Configuration

QPM allows you to verify whether any configuration changes were made on your devices since the last time you deployed. It compares the policies currently configured on the devices with the policies defined in your deployment group. You can create a Device Configuration Verification job to view the configuration for the current deployment group. You cannot create a device configuration verification job for a historical version.

If CLI changes were made on a device after deployment, there might be a mismatch between the deployment group and the device configuration. For each device, the assigned QoS configuration in the current deployment group is compared with the actual configuration on the device. A status of Match or Mismatch is displayed for each device.

The following topics describe:

- Creating a Device Configuration Verification Job, page 7-30
- Viewing the Device Configuration Verification Jobs, page 7-32

Creating a Device Configuration Verification Job

The Device Configuration Verification wizard guides you through the steps required to create a new device configuration verification job, for some or all of the devices in a deployment group.

The steps of the wizard are:

- Step 1: Selecting the Deployment Group for a Verification Job, page 7-30
- Step 2: Previewing and Selecting the Devices for a Verification Job, page 7-31
- Step 3: Confirming the Wizard Information for a Verification Job, page 7-32

Related Topics

- Using QPM Wizards, page 3-9
- Creating a Device Configuration Verification Job, page 7-30

Step 1: Selecting the Deployment Group for a Verification Job

In this step of the Device Configuration Verification wizard, you select the deployment group that contains the devices whose configurations you want to verify. The deployment group must be one of those that are currently managed.

Procedure

Step 1 Select **Reports > Conflicts > Verify Device Configuration**. The Verify Device Configuration page appears.

Step 2 Click **New Verification**.

The Device Configuration Verification wizard appears at the first page—Deployment Group Selection.

Step 3 Select the current deployment group from the list.

To view the details (Owner, Creation Time) of all the current deployment groups, and then make your selection:

a. Click the **View list** link. The Deployment Groups List page appears.

b. Select the required deployment group and click **Select**.

The deployment group will appear selected in the Deployment Group Selection page of the wizard.

Step 4 Click **Next** to move to the next step of the wizard.

Related Topics

- Creating a Device Configuration Verification Job, page 7-30
- Step 2: Previewing and Selecting the Devices for a Verification Job, page 7-31

Step 2: Previewing and Selecting the Devices for a Verification Job

In this step of the Device Configuration Verification wizard, you select the devices and preview their configurations. This page displays a list of all the devices that are part of the selected deployment group.

Procedure

Step 1 In the Device Selection and Preview page, select the check boxes alongside the devices whose configuration details you want to verify. By default, all the devices will be selected.

Step 2 To preview the CLI configuration commands for a device:

a. Click its Policy Configuration link.

A preview window opens, displaying the following configuration details for the device:

- Backup ShowRun configuration commands.
- Incremental Telnet script commands that will be written (if deploying to network devices).

b. Click the appropriate buttons to view the relevant configuration details.

c. After you have finished previewing the device's configuration, click **Close** to close the Preview window.

Step 3 Click **Next** to move to the final step of the Device Configuration Verification wizard.

Related Topics

- Creating a Device Configuration Verification Job, page 7-30
- Step 3: Confirming the Wizard Information for a Verification Job, page 7-32

Step 3: Confirming the Wizard Information for a Verification Job

The last step of the Device Configuration Verification wizard asks you to verify the deployment group name and the number of devices selected for verification.

Procedure

Step 1 Verify the job information displayed on the page. If you are not satisfied with any of the job details, you can go back through the wizard to make the required changes.

Step 2 Click **Verify**. The Verify Device Configuration page appears, displaying the current verification jobs that are being executed.

Related Topics

- Creating a Device Configuration Verification Job, page 7-30
- Viewing the Device Configuration Verification Jobs, page 7-32

Viewing the Device Configuration Verification Jobs

The Verify Device Configuration page displays a table of all the verification requests that were created and those that are currently being executed. This page provides a dynamic view of all the device verification jobs and their status. It also

displays the time the last device verification was initiated for a job, the job's status, and its owner. The status of a device verification job may be Pending, In Progress, Completed, or Failed.

During the device verification process, CLI commands are generated for all the devices in the deployment group. A status of "In Progress" will be displayed for a job during this process. When the job is completed successfully, its status will change to "Completed".

From this page, you can open a Job Verification Details report that describes the configuration details of a device configuration verification job. For each device in your deployment group, the device status is displayed and whether there was a Match or Mismatch in the device configuration. If the configuration assigned to the device in the current deployment group is the same as the configuration on the device, a status of "Match" is displayed. If CLI changes were made on a device after deployment, a status of "Mismatch" will be displayed for it, indicating a mismatch between the deployment group and the device configuration. If required, you can determine why a mismatch occurred by viewing the CLI commands that were used to configure the device.

From the Verify Device Configuration page, you can:

- Create a new device configuration verification job.
- View the configuration details of a device verification job.
- Delete a device configuration verification job from the list.

Procedure

Step 1 Select **Reports > Conflicts > Verify Device Configuration**. The Verify Device Configuration page appears.

Note The Verify Device Configuration page appears automatically when you click **Verify** in the last step of the Device Configuration Verification wizard (see Step 3: Confirming the Wizard Information for a Verification Job, page 7-32).

For more information about the Verify Device Configuration page, see Verify Device Configuration Page, page D-36.

Step 2 To create a new device configuration verification job, click **New Verification**. The Device Configuration Verification wizard appears.

Step 3 To view the details of a device configuration verification job:

a. Select the check box next to the verification job and click **View Verification Details** or click the job's Details icon. The Job Verification Details page appears for the device configuration verification job.

For more information about the Job Verification Details page, see Job Verification Details Page, page D-37.

b. To view the CLI commands that were used to configure a device:

- Select the check box next to the required device in the table.
- Click **View CLI Commands**.
- A preview window opens, displaying the Backup ShowRun configuration commands and any incremental Telnet script commands that were written to the device.
- Click the appropriate buttons to view the relevant configuration details.
- Click **Close** to close the Preview window.

Step 4 To delete a device configuration verification job:

a. Select the jobs you want to remove from the list, and click **Delete**.

A dialog box opens, warning you that the selected jobs will be deleted.

b. Click **OK** to confirm the deletion. The jobs will be deleted from the list of device configuration verification jobs.

Related Topics

- Verifying Device Configuration, page 7-29
- Creating a Device Configuration Verification Job, page 7-30

Deploying Jobs from an External Trigger

QPM allows external applications to trigger the deployment of a deployment group, by issuing an HTTPS request. This feature allows you to implement event or time-based triggering of deployment, as required.

Note You can only trigger the deployment of the current version of a deployment group.

Certain parameters *must* be included in the HTTPS request. They are:

- User name.
- User password.
- Device group name.
- Deployment group name.

Job Name and Job Description are optional parameters that may be included in the HTTPS request.

The format of the HTTPS request is as follows (there are no spaces in the URL):

https://<*host_name*>/MDC/servlet/com.cisco.core.mice.direct?
command=directOneTimeConnection
&username=<*user_ID*>&password=<*user_password*>
&url=/qpm/servlet/ExternalDeploymentServlet
&deployment_group=<*deployment_group_name*>
&device_group=<*device_group_name*>
&job_name=<*job_name*>&job_description=<*job_description*>

The following provides an example of an external HTTPS request:

https://localhost/MDC/servlet/com.cisco.core.mice.direct?
command=directOneTimeConnection &username=john&password=abc
&url=/qpm/servlet/ExternalDeploymentServlet
&deployment_group=Default%20Deployment%20Group
&device_group=Default%20Device%20Group
&job_name=external%20deployment
&job_description=auto%20deployment%20on%20weekend

If the input parameters are correct, the deployment process will be activated. The request will respond with either a success or failure message, including descriptions of any errors or warnings.

Related Topics

- Understanding Policy Deployment, page 7-2