HP Server Automation

for the HP-UX operating system

Software Version: 7.87 or later and 9.04 or later

HP-UX Patching Whitepaper

Document Release Date: August 2011
Software Release Dates: SA 7.87 - August 2011; SA 9.04 - June 2011

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HP-UX Patching Whitepaper

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The title page of this document contains the following identifying information:

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Contents

HP-UX Patch Management

Overview

In Server Automation (SA), patches for the HP-UX operating system are delivered exclusively by HP as *depots*. Depots contain multiple patch products and each patch product contains multiple patch file sets. These depots can be uploaded into Server Automation.

In patch management for HP-UX, you can:

- Create HP-UX software policies from HP-UX patches or patch bundles.
- Identify, install, and remove HP-UX patches from the server.
- Install software and patches by remediating software policies.
- Download metadata information associated with each patch.
- Support multi-platform patches, patch dependencies, and automatic reboots.
- Run compliance scans.

Features

SA automates HP-UX patch management by enabling you to:

- Define HP-UX software policies that provide a model-based approach to managing your HP-UX servers. Server Automation enables you to create a model of your IT environment using HP-UX software policies. These software policies specify patches and scripts that can be installed on the managed servers.
- Install HP-UX patches and patch bundles on your managed servers.
- Establish a patch installation process.
- Schedule the stages of patch management: analysis, download, and installation. You can also set up email notification for each stage and associate a ticket ID for each job.
- Verify the compliance status of servers, based on software policies.
- Display the Compliance view to see whether servers are configured according to the software policy and to remediate non-compliant servers.
- Search for software resources and servers.
- Use the Library to search for HP-UX packages, patches, and software policies using powerful and flexible search criteria, such as availability, architecture, operating system, reboot options, version, and so on. You can also search for HP-UX software policies by name, folder name, availability, and operating system.
- View patch dependencies and patch applicability analysis while previewing patch installation.

Prerequisites

You must complete the following tasks to use the patch management for HP-UX:

- Download the HP-UX Software Catalog file.

  You must have a service level contract to download the HP-UX Software Catalog file. Use the `import_hpux_metadata` script to download this file. For more information, review the `-h` option that is provided with this script. See HP-UX Depots on page 4.

- Upload the new patches and re-upload the existing HP-UX patches, depots, and bundles to the SA.

- Update the HP-UX agent on all existing managed servers. The agent version must be equal to or higher than opsware-agent-37.0.0.2.130.

Supported Operating Systems

See the *SA Support and Compatibility Matrix* for detailed information about supported HP-UX operating systems for patch management.

HP-UX Depots

The `import_hpux_depot` script imports HP-UX patches, bundles, and depots into the SA Library. For each source depot, this tool creates a `<depot name>` Depot policy in the SA Library that contains the depot's products.

The `import_hpux_depot` script requires the `.depot` extension to script input:

- By default, standard HP-UX bundles that are downloaded from *http://itrc.hp.com* already have a `.depot` extension.

- By default, HP-UX patches that are downloaded from *http://itrc.hp.com* do not include the `.depot` extension. These patches must be manually downloaded to an HP-UX server, unshared to create a `.depot` file, and then uploaded to the SA Library using the `import_hpux_depot script`.

The `import_hpux_depot` script is located in the following directory:

`/opt/opsware/mm_wordbot/util/import_hpux_depots`

Importing patches and depots using the SA Client instead of scripts will not create software policies and patch dependency will not work.

After HP-UX patches have been uploaded to the SA Library, you cannot delete them. The delete option is disabled when you select an "HP-UX Patch Product" or an "HP-UX Patch Fileset".

Table 1 describes the script's options.

Table 1   Options of import_hpux_depot

Option	Description
`import_hpux_depots [options]`	All *.depot files in the current working directory are imported into the Library.
`import_hpux_depots [options] <source-directory>`	All *.depot files in the specified directory are imported into the Library.
`import_hpux_depots [options] <*.depot`	The specified depots are imported into the Library.
`import_hpux_depots -h`	Show additional options.
`-b, --bundle-policies create a policy for each depot bundle`	For each bundle that appears in a source depot, this tool creates a `<bundle name>` Bundle policy in the SA Library that contains the bundle's products using the `--bundle-policies` option.
`-f, --force`	Force depot products to be imported even if already in the SA Library.
`-h, --help`	Displays the help message.
`-n, --silent`	Display errors only.
`-o OS, --os=OS`	HP-UX release of depot products 10.20, 11.00, 11.11, 11.23, and 11.31. Some patches are common to both 11.23 and 11.31 operating system versions. Use -o=11.23 or -o=11.31 to upload these patches into the SA Library.
`-p POLICY_FOLDER, --policy_folder=POLICY_FOLDER`	Path to Library folder in which to create policies.
`-s SPLIT, --split=SPLIT How to split each depot (default: product): 'product', 'instance', 'none'`	Products that are already in the SA Library are not re-imported unless `--force` is specified. By default, depots containing multiple products are split by product so that each product is kept in the SA Library as its own self-contained depot. The split behavior is controlled by the `--split` option: • `none`—Source depots are not split but are imported as is. • `product`—Source depots are split by product. If a depot contains multiple instances of the same product (by name), the instances are kept together. This is the default. • `instance`—Source depots are split by product instance. If a depot contains multiple instances of the same product (by name), each instance is split into its own depot.

Table 1   Options of import_hpux_depot (cont'd)

Option	Description
`-u USERNAME, --username=USERNAME`	Upload packages as specified user (default: opsware).
`-v, --verbose`	Display verbose output
`--manual`	Show manual page and exit.
`--version`	Show version and exit.

HP-UX Software Catalog File

The HP-UX Software Catalog file is the HP-UX Patch Database in XML format. The catalog file is `swa_catalog.xml` and can be downloaded from *ftp://ftp.itrc.hp.com/export/patches*.

The HP-UX Metadata script is used to import the HP-UX Software Catalog file into the SA Library. This script can list dependent patches for any patch that exists in the software catalog file and indicate the dependent patches that are missing in the package repository.

The HP-UX Metadata script is located in the following directory:

`/opt/opsware/mm_wordbot/util/import_hpux_metadata`

Table 2 describes the script's options.

Table 2   Options of the HP-UX Metadata Script

Option	Description
`-a HPUX_ANALYZE_PATCHES,` `--analyze_patches=HPUX_ANALYZE_PA` `TCHES`	Specifies the HP-UX patches that will be analyzed for any dependent patches missing in the package repository. Multiple HP-UX patches can be specified by separating them with a comma (,). To analyze all HP-UX patches in the package repository, include the keyword `all`.
`-c HPUX_SW_CATALOG_FILE,` `--catalog_file=HPUX_SW_CATALOG_FI` `LE`	Specifies the source location of the HP-UX software catalog file. The `swa_catalog.xml` catalog file can be downloaded from *ftp://ftp.itrc.hp.com/export/patches*. This option does not apply when the user ID and password are specified.
`-d` `DISPLAY_DEPENDENCIES,--display_de` `pendencies=DISPLAY_DEPENDENCIES`	Specifies HP-UX patches for which the dependencies should be displayed. To display the dependencies for all patches in the software catalog file, include the keyword `all`.
`-h, --help`	Displays the help message.

Table 2   Options of the HP-UX Metadata Script (cont'd)

Option	Description
`-n, --no_supersedence`	Flag is used with the `-a` option indicating whether to use the superseded dependence tree or the basic dependence tree for reporting missing patches. The superseded dependence tree is the default behavior for HP-UX patching. It performs the most recent dependency check. The basic dependency tree performs the least recent dependence check.
-p PASSWORD --password=PASSWORD	The password that is required to access the *itrc.hp.com* website to automatically download the `swa_catalog.xml` file. Both user ID and password must be specified.
`-u USERID, --user=USERID`	The user ID that is required to access the *itrc.hp.com* website to automatically download the `swa_catalog.xml` file. Both user ID and password must be specified.

Software Policy Management

In Server Automation, HP-UX software policies enable you to install HP-UX software and patches on servers and groups of servers. When you create a software policy, you attach it to servers or groups of servers. When you remediate a server or a group of servers, the patches specified in the attached software policy are automatically installed. The remediation process compares what is actually installed on a server with the software policy that specifies the patches that should be installed on the server. SA then determines what operations are required to modify the server to bring it *in compliance* with the policy. The following sections describe how to manage HP-UX software policies.

Creating an HP-UX Software Policy

In the SA Client, you create a software policy by using either one of the following Library features:
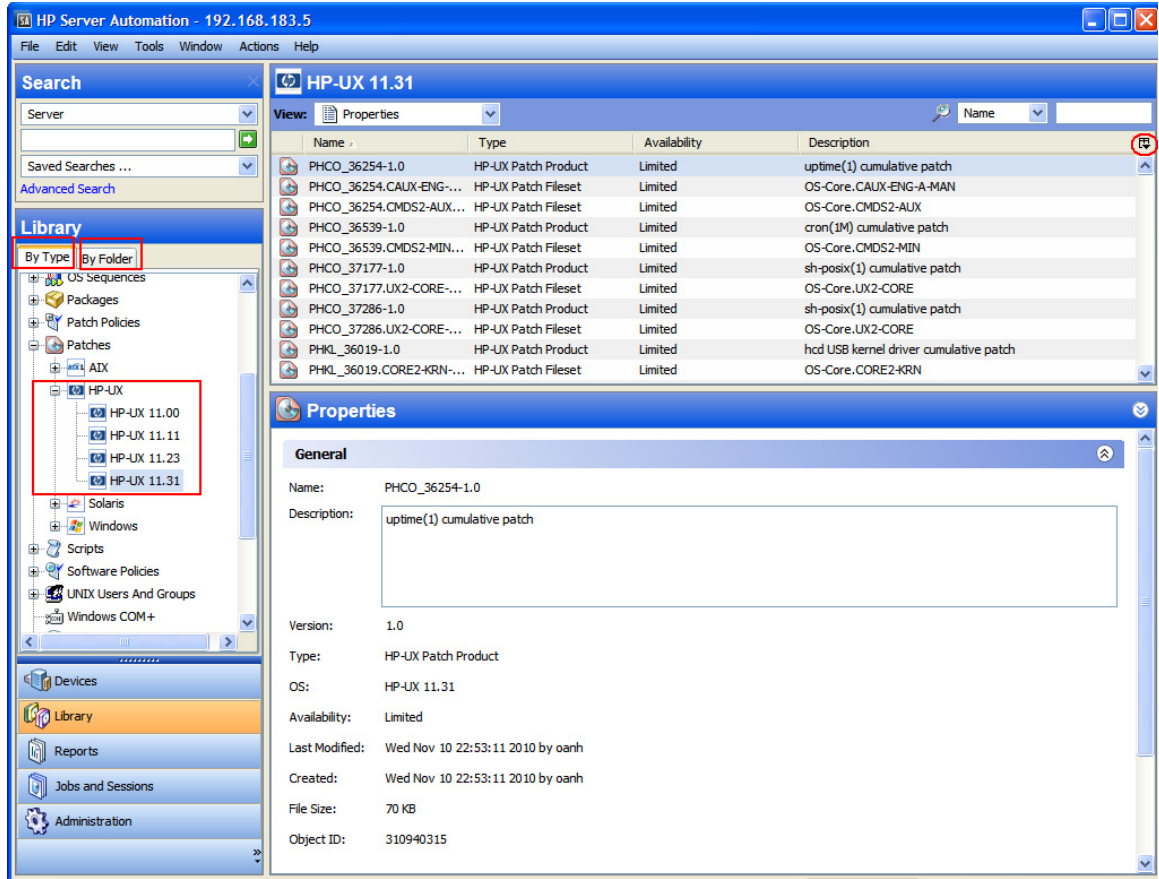
- Library—By Type
- Library—By Folder

✔ You must have permissions to create and manage an HP-UX software policy. To obtain these permissions, contact your system administrator. See the *SA Administration Guide* for more information about software management permissions.

In the content pane, a dimmed patch icon indicates that the patch has not been uploaded to the Library. Use the column selector to control the columns of patch metadata data that you want to display. See Table 1.

Figure 1   HP-UX Patches in the SA Client Library

Library—By Type

To use the By Type feature to create a software policy:

1   In the navigation pane, select **Library ➤ By Type ➤ Software Policies ➤ HP-UX**. The content pane displays a list of software policies. By default, the software policies are organized by operating system families.

2   Double-click to select an operating system.

3   From the Actions menu, select **New** to open the New Software Policy window.

4   In the Name field, enter the name of the HP-UX software policy.

5   (*Optional*) In the Description field, enter text that describes the purpose or contents of the policy.

6   Next to the Location field, click **Select** to specify the location for the software policy in the folder hierarchy.

7   In the Select Folder window, select a folder in the Library to specify the location of the software policy and then click **Select** to save your setting.

8   From the Availability drop-down list, select an SA server life cycle value (Available or Deprecated) for the software policy.

9   From the OS drop-down list, select the operating system family or specific operating systems in that family.

10 Keep the Template value set to No, which is the default.

11 From the File menu, select Save.

Library—By Folder

1 In the navigation pane, select **Library ➤ By Folder**. The content pane displays the folder hierarchy in the library.

2 In the content pane, select the folder that you want to contain the software policy.

3 From the Actions menu, select **New ➤ Software Policy** to open the New Software Policy window.

4 In the Name field, enter the name of the HP-UX software policy.

5 (*Optional*) In the Description field, enter text that describes the purpose or contents of the policy.

6 Next to the Location field, click **Select** to change the location for the software policy in the folder hierarchy.

7 In the Select Folder window, select a folder in the Library to specify the location of the software policy and then **Select** to save your setting.

8 In the Availability drop-down list, select an SA server life cycle value (Available or Deprecated) for the software policy.

9 In the OS drop-down list, select the operating system family or specific operating systems in that family.

10 Keep the Template value set to No, which is the default.

11 From the File menu, select Save.

Viewing an HP-UX Software Policy

In the SA Client, you view a software policy by using any of the following navigation features:

• Search

• Devices

• Library—By Type

• Library—By Folder

Search

To use the Search feature to view a software policy:

1 In the navigation pane, select Search.

2 In the drop-down list, select Software Policy and then enter the name of the policy in the text field.

3 Click to display the search results in the content pane.

4 In the content pane, select the software policy and then right-click to open the Software Policy window.

Devices

1 In the navigation pane, select **Devices ➤ Servers ➤ All Managed Servers** to display a list of servers in the content pane.

   Or

   In the navigation pane, select **Devices ➤ Device Groups** to display a list of servers in the content pane

2 In the content pane, select a server.

3 Right-click the selected server to open the Server window.

4 In the Information pane, select **Management Policies.**

5 In the Management Policies pane, select Software Policies to display the software policies attached to the server in the content pane.

6 In the content pane, select the software policy and then right-click to open the Software Policy window.

Library—By Type

1 In the navigation pane, select **Library ➤ By Type ➤ Software Policies ➤ HP-UX** and an operating system version. The content pane displays a list of software policies. By default, the software policies are organized by operating system families.

2 In the content pane, select the software policy and then right-click to open the Software Policy window.

Library—By Folder

1 In the navigation pane, select **Library ➤ By Folder**. The content pane displays the folder hierarchy in the library.

2 In the content pane, select the folder that contains the software policy.

3 Right-click to open the folder.

4 Select the software policy and then right-click to open the Software Policy window.

Editing an HP-UX Software Policy

After you create an HP-UX software policy, you can view and modify its properties. You can view properties, such as the SA user who created the software policy, the date when it was created, and the SA ID of the software policy. You can also modify (edit) the name, description, availability, location of the software policy in the Library, and the operating systems of the software policy.

> You must have permissions to manage an HP-UX software policy. To obtain these permissions, contact your system administrator. See the *SA Administration Guide* for more information about software management permissions.

To edit the properties of a software policy:

1   In the navigation pane, select **Library ➤ By Type ➤ Software Policies ➤ HP-UX** and an operating system version.

2   In the content pane, select the software policy and then right-click to open the Software Policy window.

3   In the Software Policy window, in the Views pane, select Properties.

4   In the Properties content pane, you can edit the Name, Description, Location, Availability, and OS for the software policy. See Creating an HP-UX Software Policy on page 7 for guidelines about information in these fields.

5   After you have made your changes, from the File menu, select Save.

Adding an HP-UX Patch to a Software Policy

After you create an HP-UX software policy, you can add HP-UX patches, HP-UX software, and server scripts to it. Adding these does not install them on a managed server. You must attach the software policy to a managed server and then remediate the server.

> You must have permissions to add an HP-UX patch, HP-UX software, and server scripts to an HP-UX software policy. To obtain these permissions, contact your system administrator. See the *SA Administration Guide* for more information about software management permissions.

To add software resources to a software policy:

1   In the navigation pane, select **Library ➤ By Type ➤ Software Policies ➤ HP-UX** and an operating system version.

2   In the content pane, select a software policy.

3   Right-click the selected software policy to open the Software Policy window.

4   In the Views pane, select Policy Items.

5   Click ➕ or, from the Actions menu, select Add to display the Select Library Item window.

6   Select the Browse Types tab to display items that can be added to the software policy.

7 Select one or more items you want to add to the policy and then click **Select**. The items are added to the policy.

Or

Select the Browse Folders tab to display the folder hierarchy in the Library and the list of items contained in the folders. Select one or more items you want to add to the policy and then click **Select**. The items are added to the policy.

8 To change the order in which the software is installed, use the ⬆ ⬇ arrows.

9 To remove an item from the policy, select it and then click ➖. See Removing Software from a Software Policy on page 12 for more information about this action.

10 From the File menu, select Save to save the changes you made to the policy.

Removing Software from a Software Policy

When you remove software from an HP-UX software policy, the software is not uninstalled from the managed server. This action only removes the software from the policy. To uninstall the HP-UX software from a managed server, you must directly uninstall the software from the managed server.

☑ You must have permissions to remove HP-UX software from an HP-UX software policy. To obtain these permissions, contact your system administrator. For more information, see the *SA Administration Guide*.

To remove HP-UX software from a software policy:

1 In the navigation pane, select **Library ➤ By Type ➤ Software Policies ➤ HP-UX** and an operating system version.

2 In the content pane, select the software policy and then right-click to open the Software Policy window.

3 In the Views pane, select Policy Items.

4 Select the items that you want to remove from the list of policy items displayed in the Content pane.

5 Click ➖ or, from the Actions menu, select Remove.

6 From the File menu, select Save to save the changes you made to the policy.

Viewing Software Policy History

1 In the navigation pane, select **Library ➤ By Type ➤ Software Policies ➤ HP-UX** and an operating system version.

2 In the content pane, select the software policy and then right-click to open the Software Policy window.

3 In the Views pane, select History. The events associated with the software policy display in the content pane. You can view the action performed on the policy, the user who performed the action, and the time when the action was performed.

4 From the Show drop-down list, select a meaningful time period narrows or widens the volume of events.

Viewing Servers Attached to a Software Policy

In the SA Client, you can view a list of all servers and device groups that have a selected HP-UX software policy attached to them.

To view a list of all servers that have a selected HP-UX software policy attached to them:

1 In the navigation pane, select **Library ➤ By Type ➤ Software Policies ➤ HP-UX** and an operating system version.

2 In the content pane, select the software policy and then right-click to open the Software Policy window.

3 In the Views pane, select Server Usage. A list of servers that have the selected software policy attached to them displays in the content pane.

Finding a Software Policy in Folders

To find an HP-UX software policy in the folder hierarchy:

1 In the navigation pane, select **Library ➤ By Type ➤ Software Policies ➤ HP-UX** and an operating system version.

2 In the content pane, select a software policy.

3 Right-click and then select **Locate in Folders** to display the folder hierarchy for the software policy in the content pane.

Custom Attributes

Patch management for HP-UX enables you to set a `hpuxpatch_dont_supersede` custom attribute to any managed server, as shown in Figure 2.

Figure 2   Custom Attribute: hpuxpatch_dont_supersede
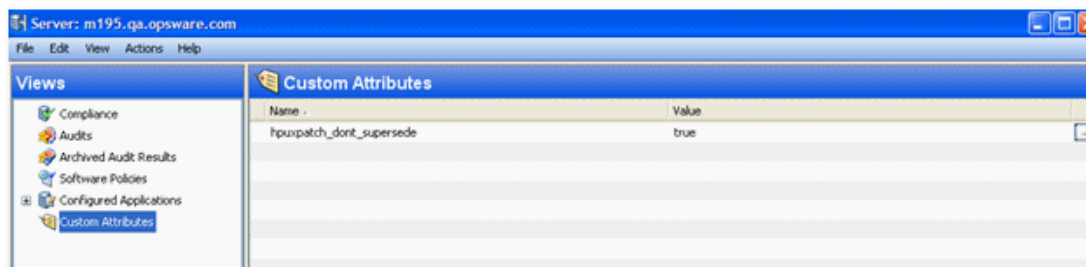
Server Automation requires that the latest patches are included in the software policy, with the custom attribute *not* set. This default behavior is designed to resolve dependency by looking for the latest patches in the software policy. If the latest patches are not available, SA will display an error message that reminds you to download the latest patches from HP.

Patch Compliance

An HP-UX patch compliance scan compares the patches that are installed on a managed server with the patch policies that are attached to the server. If the actual server configuration does not match the patch policies attached to the server, the server is *out of compliance* with the patch policies. In addition, if a patch in the patch policy has been superseded by a newer patch and the newer patch is installed on a server, that server will be marked as *compliant*.

In the SA Client, when you perform a patch compliance scan, the scan indicates the server's overall compliance with all HP-UX patch policies that are attached to the server. Even if only one HP-UX patch policy attached to the server is not compliant, the server is considered *non-compliant*. You can then view the non-compliant server and remediate the server against the applicable patch policy.

The SA Client displays the following compliance information for a patch policy:

Table 3   Compliance Status for a Managed Server

| Icon	Status	Description
	Compliant	All patch policies attached to a server are *compliant*—all patches specified in all patch policies are installed on the server.
	Non-compliant	At least one of the patch policies attached to the server is *not compliant*—at least one patch in the policy is not installed on the server.
	Scan Started	The patch compliance information is currently being collected.

Table 3   Compliance Status for a Managed Server

Icon	Status	Description
🟥	**Scan Failed**	The patch compliance scan was unable to run.
⬜	**Scan Needed**	The patch compliance information needs to be collected or the compliance information may be inaccurate.
—	**Not Applicable**	The patch compliance information does not apply.

See Figure 3 for an example of patch compliance status for the Standard HP-UX bundle.

Figure 3   Patch Compliance Status
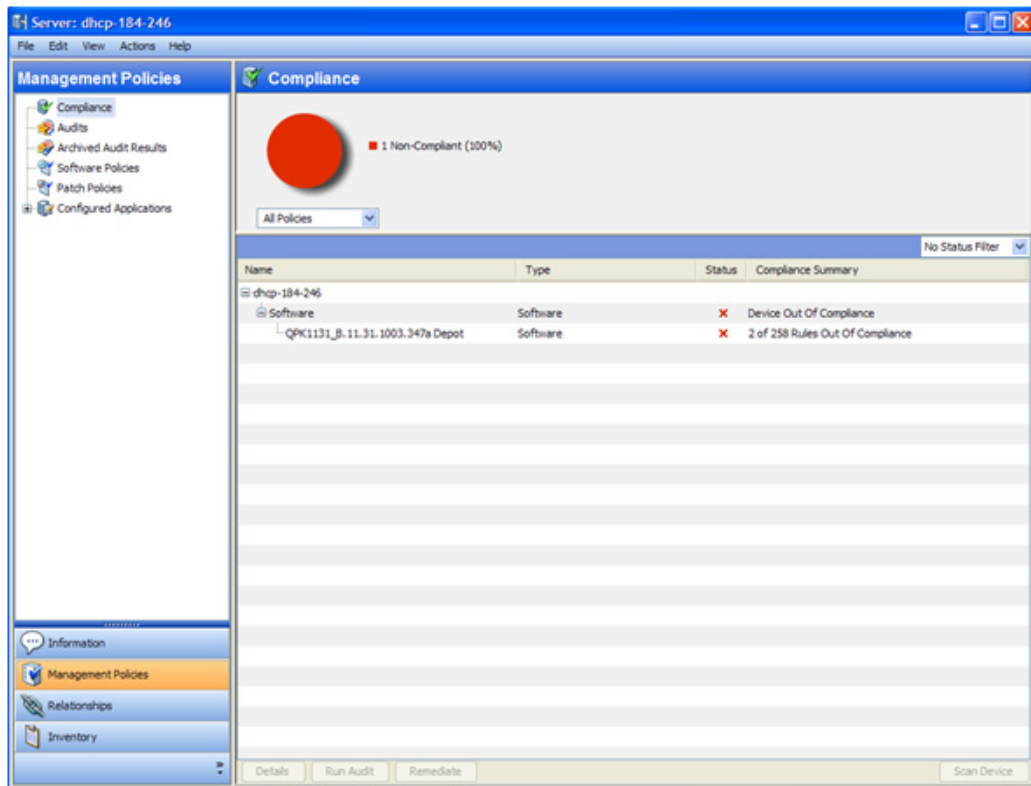
In this example, Server Automation reports that the compliance status for the Standard HP-UX QPK bundle is "2 of 258 rules out of compliance." The total number of patches within QPK bundle is 259. SA determined that one patch in this bundle is not applicable to this managed server. Therefore, it reports compliance status only for 258 patches instead of 259 patches.

SA also determined that two patches have superseded patches and that these superseded patches are installed on the server but not uploaded in the repository. Therefore, they are reported as *out of compliance*.

Patch Installation

The patch installation process consists of two phases:

- **Download Phase**—This is when the patch is downloaded from Server Automation to the managed server. This phase is commonly referred to as *staging*.

- **Installation Phase**: This is when the patch is installed on the managed server. This phase is commonly referred to as *deployment*.

You can specify whether you want the installation to occur immediately after the patch is downloaded (*staged*) or you can schedule it to occur at a later date and time. Patch management also supports the need for best-effort installations of multiple patches by allowing you to specify that the patch installation process will continue even when an error occurs with one of the patches.

SA displays the name of the command that installs the patch. The SA Agent runs this command on the managed server. You can override the default command-line arguments that you want to perform the installation.

To optimally manage HP-UX patch installations, patch management enables you to manage server reboot options and pre- and post-installation scripts, simulate (preview) a patch installation, and set up email notifications to alert you about the status of the installation process. The Install Patch wizard guides you through the setup. See Figure 4.

Figure 4   Install Patch Wizard
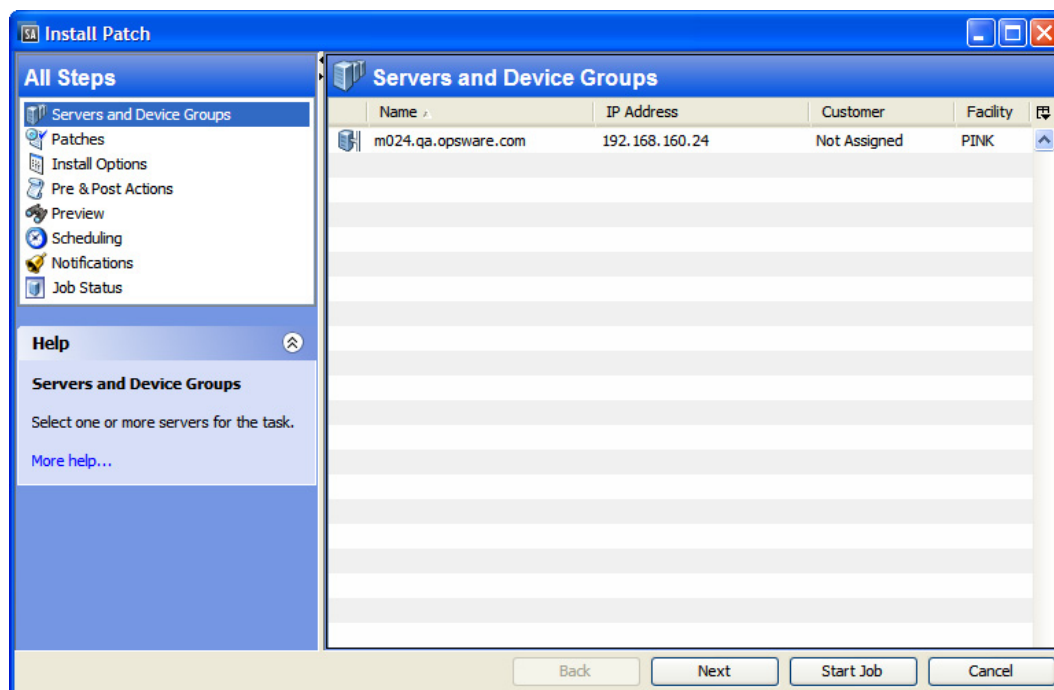
Installation Flags

You can specify installation flags that are applied when an HP-UX patch is installed. However, Server Automation also uses default installation flags and requires that patches be installed with these flags. make sure that you do not specify any installation flags that override or contradict the default flags passed in by SA.

Installing an HP-UX Patch

Before a patch can be installed on a managed server, it must be imported into SA and its status must be Available. Only system administrators who have the required permissions can install patches that are marked Limited.

> You must have permissions to manage patches. To obtain these permissions, contact your system administrator. For more information, see the *SA Administration Guide*.

You can perform the installation by explicitly selecting patches and servers.

To install a patch on a managed server:

1 In the navigation pane, select **Devices ➤ Servers ➤ All Managed Servers**

2 In the content pane, select an HP-UX server.

3 From the Actions menu, select Install Patch. The first step of the Install Patch window, Servers and Server Groups, opens.

4 Click **Next** to advance to the next step in the Install Patch wizard.

5 From the list of patches, select the patch you want to install.

6 After you complete a step, click **Next** to advance to the next step. Before you click Start Job, you can return to a completed step to make changes by clicking on it in the list of steps.

7 When you are ready to launch the installation job, click **Start Job**.

   After you launch the job, you cannot change its parameters, even if the job is scheduled to run at a later time.

Setting HP-UX Install Options

You can specify the following types of patch installation options:

- Perform the patch installation immediately after the patch is downloaded or at a later date and time.

- Do not interrupt the patch installation process, even when an error occurs with one of the patches.

- Use different command-line options to perform the installation.

To set these install options:

1 In the Install Patch window, click **Next** to advance to the Options step.

2 Select one of the following Staged Install Options:

   — **Continuous**: Enables you to run all phases as an uninterrupted operation.

   — **Staged**: Enables you to schedule the download and installation to run separately.

3 Select the Error Options check box if you want the patch installation process to continue even when an error occurs with one of the patches. By default, this check box is not selected.

4 In the Install Command text box, enter command-line arguments for the command that is displayed.

5 Click **Next** to go to the next step or click **Cancel** to close the Install Patch window.

Setting Reboot Options

To minimize the downtime that server reboots can cause, you can control when servers will and will not be rebooted. You can adopt the vendor's reboot assignments, reboot a server each time a patch is installed on it, completely suppress all server reboots, or postpone reboots until all patches are installed.

When you are selecting reboot options in the Install Patch window, HP recommends that you use the HP-UX reboot recommendations, which is the "Reboot servers as specified by patch properties" option. If you cannot use the HP-UX reboot setting, select the single reboot option, which is the "Do not reboot servers until all patches are installed" option.

The following options determine whether the servers are rebooted after the patch is installed. These options apply only to the job launched by the Install Patch window. They do not change the Reboot Required option, which is on the Install Parameters tab of the patch properties window. Except for the first option, the following options override the Reboot Required option.

- Reboot servers as specified by patch properties

- By default, the decision to reboot depends on the Reboot Required option of the patch properties. The server is rebooted only once at the end. This is done to satisfy the patch dependency. In effect, the option works as the third option which is to not reboot servers until all patches are installed

- Reboot servers after each patch install

- Even if the Reboot Required option of the patch properties is not set, reboot the server. If multiple patches are installed, the server will be rebooted only once after all patches are installed.

- Do not reboot servers until all patches are installed

- If the Reboot Required option is set for some selected patches but not for others, the server is rebooted one time after all patches are installed. If the Reboot Required option is not set for any of the selected patches, the server is not rebooted.

- Suppress all server reboots

- Even if the Reboot Required option of the patch properties is set, do not reboot the server. (Because of vendor settings, some patches ignore the suppress option and force a reboot.)

To set reboot options:

1   In the Install Patch window, click **Next** to advance to the Pre & Post Actions step.

2   Select one of the Rebooting Options.

3   Click **Next** to go to the next step or click **Cancel** to close the Install Patch window.

Specifying Install Scripts

For each patch, you can specify a command or script to run before installation or after installation. A pre-install script, for example, could check a certain condition on the managed server. If the condition is not met or if the pre-install script fails, the patch is not installed. A pre-install script could also be used to shut down a service or application before it is patched.

A post-install script could be used to perform a certain cleanup process on the managed server. You can also specify the following types of scripts to run on the managed server before or after an installation or download phase:

- **Pre-Instal**l: A script that runs before patches are installed on the managed server.

- **Post-Install**: A script that runs after patches are installed on the managed server.

To specify a pre-install script:

1   In the Install Patch window, click **Next** to advance to the Pre & Post Actions step.

2   Select the Pre-Install tab. You may specify different scripts and options on each of the tabs.

3   Select **Enable Script**. This option enables the remainder of the fields on the tab. If Enable Script is not selected, the script will not run.

4   Select either **Saved Script** or **Ad-Hoc Script**.

5   A Saved Script was previously stored in SA with the SAS Web Client. To specify the script, click **Select**.

6   If the script requires command-line flags, enter the flags in the Command text box.

7   Specify the information in the User section. If you choose a system other than Local, enter the User Name, Password, and Domain. The script will be run by this user on the managed server.

8   To stop the installation if the script returns an error, select the **Error** check box.

9   Click **Next** to go to the next step or click **Cancel** to close the Install Patch window.

Scheduling a Patch Installation

Because the two phases of patching can be decoupled, you can schedule when you want patches installed (*deployed*) to occur independently of when patches are downloaded (*staged*).

To schedule a patch installation:

1   In the Install Patch window, click **Next** to advance to the Scheduling step.

By default, the Scheduling step displays only the scheduling options for the install phase. If you selected Staged in the Install Options step, the scheduling options for the download phase are also displayed.

2   Select one of the following Install Phase options:

— **Run Task Immediately**: This enables the system to perform a preview analysis in the Summary Review step. The scheduling option for the download phase is Run Immediately Following Download.

— **Run Task At**: This enables you to specify a later date and time that you want the installation or download performed.

3   Click **Next** to go to the next step or click **Cancel** to close the Install Patch window. A scheduled patch installation can be cancelled (prior to its execution), even if the patch download has already completed.

Setting Up Email Notifications

You can set up email notifications to alert users when the download and installation operations complete successfully or with errors.

To set up email notifications:

1   In the Install Patch window, click **Next** to advance to the Notifications step.

2   To set the notification status on the success of a Job, select the icon. To set the notification status on the failure of a Job, select the icon. By default, the Notification step displays only the notification status for the installation phase.

3   Enter a Ticket ID to be associated with a Job in the Ticket ID field.

4   Click **Next** to go to the next step or click **Cancel** to close the Install Patch window.

▶   If you previously selected Staged in the Install Options step, the Notifications pane displays notification options for both the download and installation phase

Previewing a Patch Installation

The installation preview process provides an up-to-date report about the patch state of servers. The installation preview is an optional step that lets you see what patches, either single patch or patches part of standard HP-UX bundle, will be installed on managed servers and what type of server reboots are required. This preview process verifies whether the servers you selected for the patch installation already have that patch installed. In some cases, a server could already have the patch installed if a system administrator manually installed it, which means that SA does not know about it.

The preview process also reports on dependency information, such as patches that require certain HP-UX products, and patches that obsolete other patches or are obsoleted by other patches. If a dependency is not met, SA displays an error message indicating this condition.
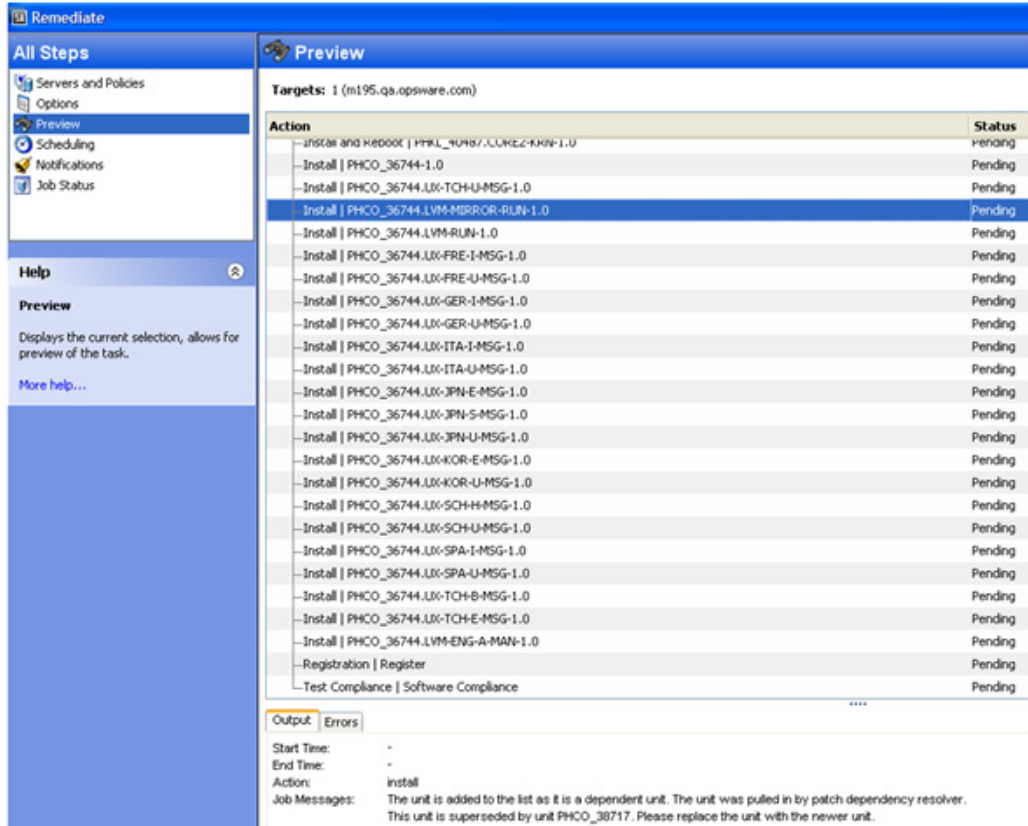
To preview a patch installation:

1   From the Install Patch window, click **Next** to advance to the Summary Review step.

2   Verify the information displayed for the Servers, Server Groups, and Patches at the top of the window.

3   (*Optional*) Click **Preview** to see the separate actions that will be performed when the patch is installed. To view the details of a previewed action, select a row in the table. See Figure 5.

4   Click **Start Job** to launch the installation job or click **Cancel** to close the Install Patch window without launching the installation.

▶   If you selected Run Task Immediately in the Scheduling step, the job begins now. If you selected Run Task At, the job will be launched at the specified time and date.

Figure 5   Patch Installation Preview

Viewing Job Progress

You can review progress information about a patch installation (job), such as whether actions completed or failed.

To display job progress information:

1   From the Install Patch window, click **Next** to advance to the Job Progress step. This starts the installation job.

The Progress bar and text indicate how many of the actions listed in the table were completed. For each server, the following actions can be performed:

— **Analyze**: SA examines the patches needed for the installation, checks the managed servers for the most recent patches installed, and determines other actions it must perform.

— **Download**: The patch is downloaded from SA to the managed server.

— **Install**: After being downloaded, the patch is installed.

— **Final Reboot**: If this action is specified in the Pre & Post Actions step, the server is rebooted.

— **Pre/Post Install/Download Script**: If this action is specified in the Pre & Post Actions step, a script is run before or after the uninstallation.

— **Install & Reboot**: When a patch will be installed is also when the server will be rebooted.

— **Verify**: Installed patches will be included in the software registration.

2   To view additional details about a specific action, select the row in the table to display the start and completion times of the job. In the navigation pane, select Jobs and Sessions to review detailed information about the job.

3   Click **End Job** to prevent the job from running or click **Close** to close the Install Patch window.

Patch Uninstallation

Uninstalling HP-UX patches and bundles is not supported in this release. To uninstall an HP-UX patch and bundle from a managed server, you must directly uninstall the HP-UX patch and bundles from the managed server.