

HP Database and Middleware Automation Solution Packs

For Red Hat Enterprise Linux, Solaris, AIX, and Windows®

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WebSphere 8 Patching User Guide

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Welcome to Middleware Patching

This document describes the WebSphere 8 workflows in the HP DMA Application Server Patching solution pack. You can use the workflows in this solution pack to automate the patching of one or more WebSphere 8 application servers.

Audience

This solution is designed for IT architects and engineers who are responsible for planning, implementing, and maintaining application-serving environments that use IBM WebSphere Application Server Network Deployment version 8 (WebSphere 8).

To use this solution, you should be familiar with WebSphere 8 and its requirements (see the [WebSphere 8 Product Documentation](#) on page 10).

Document Map

The following table shows you how to navigate this guide:

Topic	Description
The WebSphere 8 Patching Solution	General information about this solution, including what it contains and what it does
WebSphere 8 Patching Quick Start	A step-by-step tutorial that shows you how to run HP DMA workflows, using the Patch WebSphere 8 StandAlone Profile workflow as an example.
Workflow Details	Information about each of the two workflows included in this solution, including: prerequisites, how it works, how to run it, sample scenarios, and a list of input parameters
Tips and Best Practices	Simple procedures that you can use to accomplish a variety of common HP DMA tasks
Troubleshooting	Tips for solving common problems

Important Terms

Here are a few basic HP DMA terms that you will need to know:

- In HP DMA, a **workflow** executes a process —such as installing a software product or checking a database instance for compliance with a specific security benchmark.
- A workflow consist of a sequence of **steps**. Each step performs a very specific task. Steps can be shared among workflows.
- A **solution pack** contains one or more related workflow templates. These templates are read-only and cannot be deployed. To run one of the workflows included in this solution pack, you must first create a deployable copy of that template and then customize that copy for your environment.
- Steps can have input and output **parameters**, whose values will be unique to your environment.

If you provide correct values for the input parameters that each scenario requires, the workflow will be able to accomplish its objective. Output parameters from one step often serve as input parameters to another step.

- The **software repository** contains any files that a workflow might need to carry out its purpose (for example, software binaries or patch archives). If the files that a workflow requires are not in the software repository, they must be stored locally on each target server.

When you are using HP DMA with HP Server Automation (HP SA), the software repository is the HP SA Software Library.

Additional terms are defined in the [Glossary](#) on page 60.

Tip: For more information about the basic structure of a solution pack, including HP DMA screen images, see [How a Solution Pack is Organized](#) on page 49.

Chapter 1

The WebSphere 8 Patching Solution

The HP Database and Middleware Automation WebSphere 8 patching solution automates the process of applying fixes and updates to one or more WebSphere 8 application servers.

This solution contains the following workflows:

- Patch WebSphere 8 Standalone Profile
- Patch WebSphere 8 Network Deployment Cell

The WebSphere 8 patching workflows perform extensive validation checks prior to performing their intended function. All parameter values are validated to ensure that they do not contain any prohibited characters. Additional validation checks are performed at the operating system level. These include file system space checks and RPM checks (on Red Hat Linux platforms). The workflows determine whether the pertinent files exist on the target machine; if they do not, the files are downloaded from the HP DMA server.

Although minimal HP DMA Application Server Patching Solution Pack knowledge is required to run this workflow using its default settings, the workflow is highly customizable and can support complex environment-specific deployment scenarios.

The remaining topics in this chapter provide the following contextual information about these workflows:

- [Supported Products and Platforms](#) on next page
- [Prerequisites](#) on next page
- [WebSphere 8 Product Documentation](#) on next page
- [Additional Resources](#) on page 11

Supported Products and Platforms

Operating Systems

WebSphere 8 patching workflows are supported on AIX, Solaris, Red Hat Enterprise Linux, and Windows platforms.

For specific operating system versions supported by each workflow, see the *HP Database and Middleware Automation version 9.15 Support Matrix* available on the HP Software Product Manuals web site:

<http://h20230.www2.hp.com/selfsolve/manuals>

Hardware Requirements

For HP DMA hardware requirements, see the *HP Server Automation Quick Reference: SA Installation Requirements* or the *HP Server Automation Standard/Advanced Installation Guide*.

These documents are part of the HP Server Automation documentation library, which is available on the HP Software Product Manuals web site:

<http://h20230.www2.hp.com/selfsolve/manuals>

Software Requirements

This solution requires HP Server Automation version 9.13 with DMA 9.13 Hotfix 2 (or later).

Prerequisites

The following prerequisites must be satisfied before you can run the WebSphere 8 patching workflows in this solution pack.

1. You have installed the HP DMA Application Server Patching Solution Pack.
2. You have an HP Software support contract and have downloaded and installed the appropriate patches on your HP SA Core.
3. IBM Installation Manager software exists on each target machine.

WebSphere 8 Product Documentation

For the current list of hardware requirements, software requirements, and supported platforms for WebSphere 8, see:

<http://www.ibm.com/software/webservers/appserv/doc/latest/prereq.html>

For WebSphere 8 product documentation, see:

<http://pic.dhe.ibm.com/infocenter/wasinfo/v8r0/index.jsp>

For IBM Red Book resources for WebSphere 8, see:

<http://publib-b.boulder.ibm.com/Redbooks.nsf/portals/WebSphere>

Note: The links to the documents listed here were correct as of the publication of this guide.

Additional Resources

For information about using the HP DMA web interface, see the *User Guide: Database and Middleware Automation* version 9.13 (or later).

This document is part of the HP Server Automation documentation library, which is available on the HP Software Product Manuals web site:

<http://h20230.www2.hp.com/selfsolve/manuals>

Chapter 2

WebSphere 8 Patching Quick Start

This tutorial shows you how to install the HP DMA Application Server Patching solution pack and run a workflow. There are five basic steps:

1. [Import the Solution Pack](#)
2. [Create a Deployable Workflow](#)
3. [Create a Deployment](#)
4. [Run Your Workflow](#)
5. [View the Results](#)

Note: This tutorial uses the [Patch WebSphere 8 StandAlone Profile](#) workflow. You would follow the same steps to run the [Patch WebSphere 8 Network Deployment Cell](#) workflow.

In this tutorial, default values will be used for most input parameters. Before executing these steps, make sure that these default values are suitable for your environment.

The information presented in this tutorial assumes the following:

- HP DMA is installed and operational.
- At least one valid target is available.

Note: This tutorial uses a very simple scenario to help you get started quickly. For detailed information about how the application server patching workflows work and how you can customize them for your environment, see the [Workflow Details](#).

Import the Solution Pack

Before you can use the workflows in the HP DMA Application Server Patching solution, you must import that solution into HP DMA.

The following instructions assume that you have purchased the Application Server Patching solution pack.

To import the solution pack:

1. Get the latest Application Server Patching solution pack from HP Software Support. To do this, follow these steps:
 - a. Go to the following web site: <http://www.hp.com/go/hpssoftwaresupport>
 - b. Go to the Self-solve tab, and sign in using your HP Passport credentials (see [Support](#) on page 3).
 - c. On the Advanced Search page, specify the following search criteria:

Product:	HP Database and Middleware Automation Solution Packs
Version:	9.15
Operating System:	All Operating Systems
Document Type:	Patches
 - d. Click **Search**.
 - e. In the search results, locate and click the link for the Application Server Patching solution pack (for example: AS Patch 9.15).
 - f. Click the DOWNLOAD PATCH link, and download the ZIP file. For example:
DBMASP_00047.zip
 - g. From that ZIP file, extract the file that contains the solution pack. For example:
ASPatching_v9_15_ALL.zip
2. On the system where you downloaded the solution pack, log in to HP DMA. To do this, follow these steps:
 - a. In a web browser, go to the following URL: `http://<DMAServer>/dma/login`
Here, `<DMAServer>` represents the host name (or IP address) of your HP DMA server.
 - b. Specify your HP DMA Login Name and Password, and click **Login**.
Be sure to log in to the HP DMA server using an account with administrative privileges.
3. On the Solutions > Installed page, click the **Browse** button in the lower right corner. The Choose File dialog opens.

Note: This button and the dialog that subsequently opens may have different names depending on the browser that you are using.
4. Locate and select the solution pack file that you extracted in step 1.g (for example: ASPatching_v9_15_ALL.zip), and click **Open**.
5. Click **Import solution pack**.

Tip: To view basic information about the solution pack, hover your mouse over its name in the left pane.

hp Database & Middleware Automation Server: dma1.mycompany.com User: admin Logout

Home Automation Reports Environment **Solutions** Setup

Installed History

Installed Solutions ?

✓ Successfully imported [HP Server Automation Application Server Patching Solution Pack](#)

SOLUTION PACKS	DETAILS
<ul style="list-style-type: none">HP Server Automation Advanced Database Patching Solution Pack Version 9.15HP Server Automation Application Server Patching Solution Pack Version 9.15HP Server Automation Application Server Patching Solution Pack Version 9.15HP Server Automation Application Server Provisioning Solution Pack Version 9.15HP Server Automation Database Patching Solution Pack Version 9.15HP Server Automation Database Release Management Solution Pack Version 9.15HP Server Automation Discovery Solution Pack Version 9.15	<ul style="list-style-type: none">Name: HP Server Automation Application Server Patching Solution PackVersion: 9.15Targets: 15Installed: 29 Aug, 2012Description: Patching workflows for WebSphere, WebLogic, and JBoss Build 29872

Browse... Import solution pack

Tip: To view detailed information about the solution pack, including a list of the workflows and reports that it contains, click its name in the left pane.

The screenshot shows the HP Database & Middleware Automation console interface. At the top, there is a navigation bar with the HP logo, the text 'Database & Middleware Automation', and user information: 'Server: dma1.mycompany.com User: admin Logout'. Below this is a secondary navigation bar with links for 'Home', 'Automation', 'Reports', 'Environment', 'Solutions', and 'Setup'. The 'Solutions' link is active. Underneath, there are tabs for 'Installed' and 'History'. The main content area is titled 'HP Server Automation Application Server Patching Solution Pack' with 'Version 9.15' below it. There are four tabs: 'General', 'Policies', 'Workflows', and 'Steps'. The 'Workflows' tab is selected. On the left, a list of solution packs is shown, with 'Patch WebSphere 8 StandAlone Profile' highlighted in blue. On the right, a list of 12 workflow steps is displayed, each with a blue circular icon and a numbered button (1-12). The steps are: 1. WebSphere 8 StandAlone Patching Parameter Validation, 2. WebSphere 8 Check File Download, 3. Failure, 4. Download Software, 5. WebSphere 8 Backup Config, 6. Failure, 7. WebSphere 8 Stop Application Server, 8. Verify All Java Processes Stopped, 9. WebSphere 8 Patching Extract Archive, 10. Verify Install Manager Exists, 11. WebSphere 8 Apply Patches, and 12. WebSphere 8 Start Server. At the bottom of the console, there is a red 'X DELETE' button.

Create a Deployable Workflow

The workflow templates provided by HP in your solution pack are read-only and cannot be deployed. When you are viewing a read-only item in the HP DMA web UI, you will see the lock icon in the lower right corner:

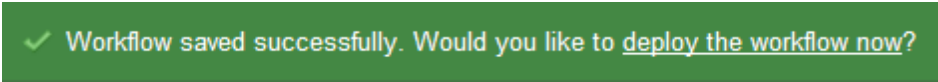


Read-only workflows are not deployable. You can create a deployable workflow by making a copy of a workflow template.¹

To create a deployable copy of the workflow template:

1. In the HP DMA web interface, go to Solutions > Installed.
2. In the left pane, click the HP DMA Application Server Patching Solution Pack workflows.
3. Go to the Workflows tab.
4. From the list of workflows, select the [Patch WebSphere 8 StandAlone Profile](#) workflow template.
5. Click the **Copy** button in the lower left corner.
6. On the Documentation tab, specify the following:
 - Name – Name that will appear in the list of available workflows
 - Tags – Keywords that you can use later to search for this workflow (optional)
 - Type – OS (this will be selected as a result of the copy)
 - Target level – Server (this will be selected as a result of the copy)
7. On the Roles tab, grant Read access to at least one user or group and Write access to at least one user or group.
8. Click **Save**.

Your new workflow now appears in the list of available workflows, and the following message is displayed:



✓ Workflow saved successfully. Would you like to [deploy the workflow now?](#)

9. Click the **deploy the workflow now** link in the green message bar.

¹For more information about creating and working with workflows, see “Workflows” in the *User Guide: Database and Middleware Automation*.

Create a Deployment

Before you can run your new workflow, you must create a deployment. A deployment associates a workflow with one or more specific targets (servers, instances, or databases).

To create a deployment:

1. If you do not see the green message bar—for example, if you navigated to another page after you created your copy of the workflow template—follow these steps:
 - a. Go to the Automation > Deployments page.
 - b. In the lower right corner, click **New deployment**.
2. Specify the following:
 - Name – Name that will appear in the list of available deployments.
 - Workflow – From the drop-down list, select the deployable workflow (the copy) that you just created.
 - Schedule – Frequency or date when the workflow will run. Select None so that the workflow will run once when you explicitly tell it to run.

- From the list of AVAILABLE targets on the left side of the Targets area, click the **ADD** link for the server where the workflow will run.

hp Database & Middleware Automation Server: dma1.mycompany.com User: admin Logout

Home Automation Reports Environment Solutions Setup

Workflows Steps Functions Policies Deployments Run Console History

Deploy Patch WebSphere 8 Standalone Profile

Targets Parameters Roles

Name: Deploy Patch WebSphere 8 Standal

Workflow: Copy of Patch WebSphere 8 StandAlone Profile [VIEW WORKFLOW](#)

Schedule: None

Targets

AVAILABLE	SELECTED
DEFAULT ADD ALL	DEFAULT REMOVE ALL
WebSphere8.mycompany.com ADD	WebSphere8.mycompany.com REMOVE

[X DELETE](#) [▶ RUN](#) [Copy](#) [Save](#) or [CANCEL](#)

4. On the Parameters tab, specify values for the following input parameters:

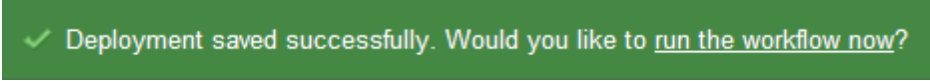
The screenshot shows the 'Parameters' tab of the 'Deploy Patch WebSphere 8 Standalone Profile' configuration page. The page title is 'WebSphere 8 Standalone Patching Parameter Validation'. The form contains several input fields, each with a text input, a dropdown menu, and a required/optional note. The parameters and their values are:

- Config Backup File:** /opt/IBM/WebSphere/backup/backup.zip (Text dropdown)
- Install Manager Location:** /opt/IBM/InstallManager (Text dropdown)
- Trust SSL Certificates:** True (Text dropdown)
- WAS Admin Password:** [Redacted] (Text dropdown)
- WAS Admin User:** wasadmin (Text dropdown)
- Web Service Password:** Discovery.Web Service Password (Policy Attribute dropdown)
- Web Service URL:** Discovery.Web Service URL (Policy Attribute dropdown)
- Web Service User:** Discovery.Web Service User (Policy Attribute dropdown)
- WebSphere Patch Extract Location:** /opt/IBM/WebSphere/patches (Text dropdown)
- WebSphere Patch File List:** /opt/IBM/WebSphere/patches/8.0.0-WS-WAS-FP00000 (Text dropdown)
- WebSphere Server Name:** server1 (Text dropdown)

Note: These are a subset of the required parameters for this workflow. Parameters that are not visible in the deployment will have default values. See [Parameters for Patch WebSphere 8 StandAlone Profile](#) for descriptions of all available input parameters for this workflow, including default values.

5. Click **Save**.

Your new deployment now appears in the list of available workflows, and the following message is displayed:



✓ Deployment saved successfully. Would you like to [run the workflow now?](#)

6. Click the **run the workflow now** link in the green message bar.

Run Your Workflow

Now you are ready to run your workflow against the target that you selected.

To run the workflow:

1. If you do not see the green message bar—for example, if you navigated to another page after you created your deployment—follow these steps: show
 - a. Go to the Automation > Run area.
 - b. In the list of WORKFLOWS on the left side, select the workflow that you created.
 - c. In the list of DEPLOYMENTS in the center, select the deployment that you just created.

2. Select the target selector check box for the server where you want to run the workflow.

The screenshot displays the 'Run Workflow' interface in the Database & Middleware Automation console. The workflow 'Copy of Patch WebSphere 8 StandAlone Profile' is selected, with a red arrow pointing to it labeled 'Workflow name'. The deployment name 'Deploy Patch WebSphere 8 Standalone Profile' is also visible, with a red arrow pointing to it labeled 'Deployment name'. Below, the target server 'WebSphere8.mycompany.com' is selected, with a red arrow pointing to it labeled 'Server' and another red arrow pointing to the 'Target selector' checkbox labeled 'Target selector'. The 'WebSphere 8 StandAlone Patching Parameter Validation' dialog is open, showing the following parameters:

Parameters	
Config Backup File:	/opt/IBM/WebSphere/bac
Install Manager Location:	/opt/IBM/InstallManager
Trust SSL Certificates:	True
WAS Admin Password:
WAS Admin User:	
Web Service Password:	Discovery.Web Service
Web Service URL:	Discovery.Web Service
Web Service User:	Discovery.Web Service
WebSphere Patch Extract Location:	/opt/IBM/WebSphere/pa
WebSphere Patch File List:	/opt/IBM/WebSphere/pa
WebSphere Server Name:	server1

At the bottom of the console, there are buttons for 'Select targets' and 'Run workflow'.

3. Click the **Run workflow** button.
4. The following message is displayed:

✓ Workflow started successfully. For status, see the [console](#) or [history](#).

5. To view the progress of your deployment, click the **console** link in the green message bar.

View the Results

While your workflow is running, you can watch its progress on the Automation > Console page.

The screenshot shows the HP Database & Middleware Automation console. The top navigation bar includes 'Home', 'Automation', 'Reports', 'Environment', 'Solutions', and 'Setup'. Below this is a secondary navigation bar with 'Workflows', 'Steps', 'Functions', 'Policies', 'Deployments', 'Run', 'Console', and 'History'. The 'Console' tab is active, displaying a table with the following data:

	Workflow	Started	Run by	Server	Instance	Database
RUNNING	Copy of Patch WebSphere 8 StandAlone Profile	21 Aug 17:58	admin	dma1.mycompany.com		

To view the progress of the workflow as the deployment proceeds, click the workflow name in the upper box on the Console page.

To view the outcome of a specific step, select that step in the left box in the Output area. Informational messages are displayed in the right box, and the values of any output parameters are listed.

This screenshot shows the same console page as above, but with the 'Copy of Patch WebSphere 8 StandAlone Profile' workflow selected. Below the table, there is an 'Output' section. On the left, a list of steps is shown with their status:

- WebSphere 8 StandAlone Patching Parameter Validation: Finished
- WebSphere 8 Check File Download: Finished
- WebSphere 8 Backup Config: Finished (highlighted)
- WebSphere 8 Stop Application Server: Running

On the right, the output for the selected step is displayed:

```
[INFO]: cmd /opt/IBM/WebSphere/AppServer/bin/backupConfig.sh /opt/IBM/WebSphere/backup/backup.zip - nostop -username ..... -password .....
jobid = 90cec2e038e8a77701394bc9327e1701
```

At the bottom right of the console area, there is a 'Cancel workflow' button.

While the workflow is running, its status indicator on the Console says RUNNING. After the workflow finishes, its status indicator changes to SUCCESS, FAILURE, or FINISHED depending on the outcome of the workflow.

This screenshot shows the console page after the workflow has completed. The status indicator for the workflow 'Copy of Patch WebSphere 8 StandAlone Profile' has changed from 'RUNNING' to 'SUCCESS'.

	Workflow	Started	Run by	Server	Instance	Database
SUCCESS	Copy of Patch WebSphere 8 StandAlone Profile	21 Aug 18:25	admin	dma1.mycompany.com		

After the workflow has finished running, you can view a summary of your deployment on the History page. This page lists all the deployments that have run on this HP DMA server during the time period specified in the Filter box.

To view step-by-step results, select the row in the table that corresponds to your deployment.

The screenshot shows the HP Database & Middleware Automation console interface. At the top, the navigation bar includes 'Home', 'Automation', 'Reports', 'Environment', 'Solutions', and 'Setup'. Below this, there are tabs for 'Workflows', 'Steps', 'Functions', 'Policies', 'Deployments', 'Run', 'Console', and 'History'. The 'History' tab is active, displaying a table of deployment records. The first record is highlighted in blue and shows a successful deployment of the 'Copy of Patch WebSphere 8 StandAlone Profile' on 21 Aug 17:58 by user 'admin' on server 'dma1.mycompany.com'. Below the table, there are three tabs: 'Output', 'Errors', and 'Header'. The 'Output' tab is selected, showing a log of system messages. The log includes information about running tests, validating paths, checking for existing installations, and backing up configuration files. It also shows the execution of commands to check for file downloads and stop the application server.

```
[INFO]: Running test: validate_path
[INFO]: validate_path file path /opt/IBM/WebSphere/patches
[INFO]: NOT creating a directory with os.makedirs(file_path) /opt/IBM/WebSphere/patches
[INFO]: Running test: validate_existing_install
[INFO]: Checking for existing install
[INFO]: Existing Installation /opt/IBM/WebSphere/AppServer/bin/manageprofiles.sh Exists
[INFO]: All parameters have been validated successfully.

[INFO]: Config Backup File /opt/ibm/websphere/backup/backup.zip

WebSphere 8 Check File Download
00:43:55 - 00:43:59 Exit: 0
Check if files exists
Verified /opt/IBM/WebSphere/patches/8.0.0-WAS-FP0000003-part1.zip
Verified /opt/IBM/WebSphere/patches/8.0.0-WAS-FP0000003-part2.zip

WebSphere 8 Backup Config
00:44:04 - 00:44:15 Exit: 0
[INFO]: cmd /opt/IBM/WebSphere/AppServer/bin/backupConfig.sh /opt/IBM/WebSphere/backup/backup.zip -nostop

WebSphere 8 Stop Application Server
00:44:20 - 00:44:32 Exit: 246
[INFO]: Running command /opt/IBM/WebSphere/AppServer/bin/stopServer.sh server1 -username *** -password ***
```

The tabs below the table show you information about each step in the workflow. This includes the start and end time for each step, the exit code, and the following information:

- Output tab – any informational messages that were produced
- Errors tab – any errors that were reported
- Header tab – values assigned to any output parameters

Chapter 3

Workflow Details

The HP DMA Application Server Patching solution pack includes the following WebSphere 8 patching workflows:

- [Patch WebSphere 8 StandAlone Profile](#) on next page
- [Patch WebSphere 8 Network Deployment Cell](#) on page 37

Each workflow included in this solution pack has a set of input parameters whose values will be unique to your environment. If you provide correct values for the parameters that each scenario requires, the workflow will be able to accomplish its objective.

There are two steps required to customize this solution. First, ensure that all required parameters are visible. You do this by using the workflow editor. Then, specify the values for those parameters. You do this when you create a deployment.

Note: For detailed instructions, see the "How to Use this Workflow" topic associated with each workflow.

The information presented here assumes the following:

- HP DMA is installed and operational.
- At least one suitable target server is available.
- You are logged in to the HP DMA web interface.
- You have permission to create, edit, and deploy copies of the workflows included in this solution pack.

Note: For information about the input parameters used by each workflow, see the "Parameters" topic associated with each workflow.

Patch WebSphere 8 StandAlone Profile

This workflow installs cumulative fixes and updates for WebSphere 8. The workflow patches a single WebSphere 8 application server instance.

Fixes and updates are installed by the workflow using the IBM Installation Manager software, which must exist on the target machine.

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow	Instructions for running this workflow in your environment
Sample Scenario	Examples of typical parameter values for this workflow
Parameters	List of input parameters for this workflow

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run this workflow:

1. You are using HP Server Automation (SA) version 9.13 with HP DMA Hotfix 2 (or later).
2. You have installed the HP DMA Application Server Patching solution pack.
3. You have a valid HP Software support contract for this solution pack.
4. You have installed and downloaded the available SA patches on your SA Core.
5. IBM Installation Manager software exists on each target machine.

For specific operating system versions supported by each workflow, see the *HP Database and Middleware Automation version 9.15 Support Matrix* available on the HP Software Product Manuals web site:

<http://h20230.www2.hp.com/selfsolve/manuals>

Dependency: This workflow runs as root.

For information about prerequisites for WebSphere 8 patching, refer to the WebSphere 8 [Product Documentation](#).

How this Workflow Works

The following information describes how the [Patch WebSphere 8 StandAlone Profile](#) workflow works.

Overview

This workflow installs cumulative fixes and updates for WebSphere 8. The workflow patches a single WebSphere 8 application server instance.

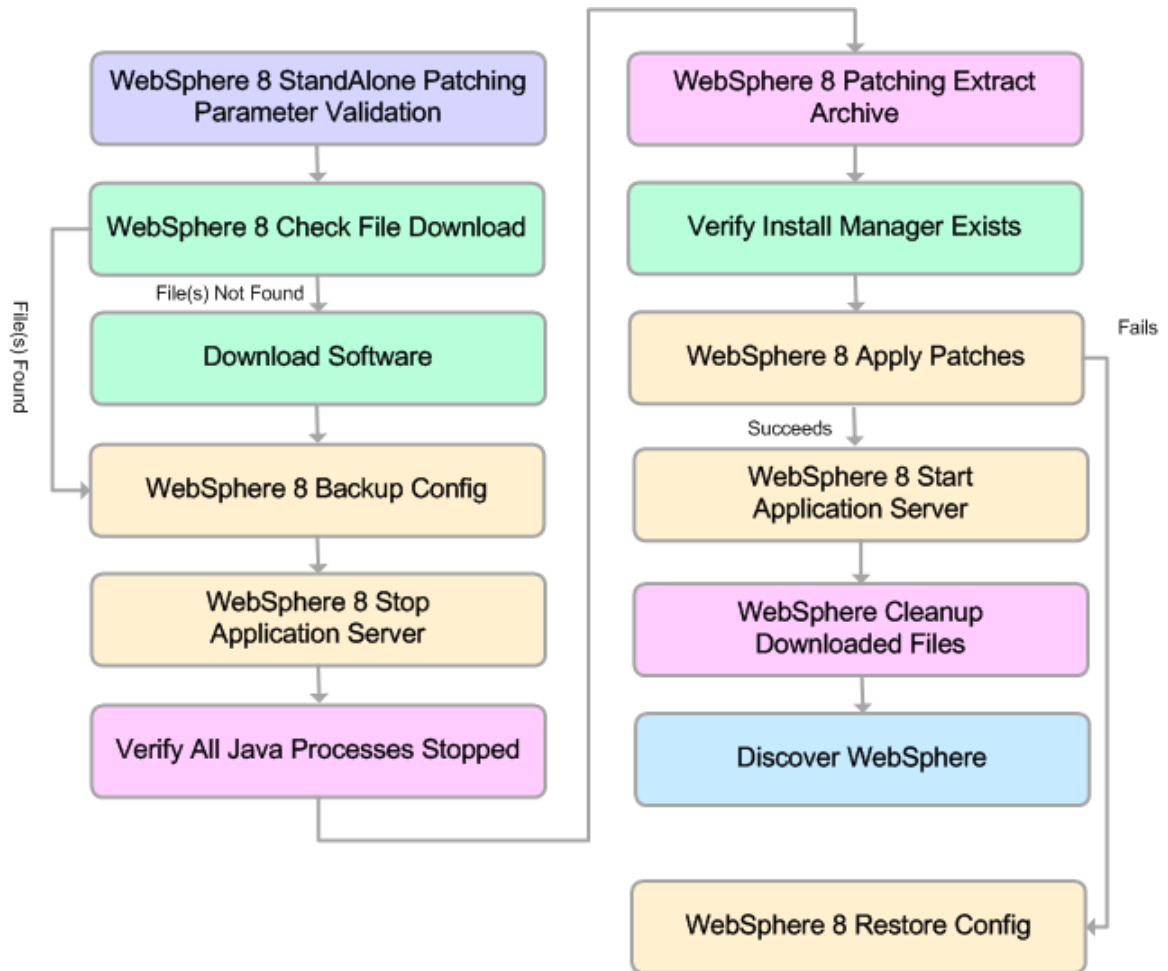
Validation Checks Performed

The validation centers on the input parameters:

- The input parameters have the proper syntax (no special characters or spaces).
- Specified files exist and have valid permissions.

Steps Executed

The Patch WebSphere 8 StandAlone Profile workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow restores the configuration, cleans up files as necessary, reports a failure, and skips all subsequent steps.



KEY:

- Workflow preparation
- OS or file system operation
- WebSphere Specific Operation
- Pre/post validation
- Parameter gathering and validation

Steps for Patch WebSphere 8 StandAlone Profile

Workflow Step	Description
WebSphere 8 StandAlone Patching Parameter Validation	Prepares the parameters needed to patch WebSphere 8.
WebSphere 8 Check File Download	Checks for the existence of a file on the target machine before downloading that file from the HP DMA server. For each file in the list: <ol style="list-style-type: none"> 1. The step determines whether the file is in the expected location on the target machine. 2. If the file is not in the expected location, the step adds that file to a list of files that need to be downloaded.
Download Software	Automates the transfer of files from the software repository to individual managed servers for use in downstream workflow steps.
WebSphere 8 Backup Config	Uses the <code>backupConfig</code> utility to backup the WebSphere configurations for the specified WebSphere 8 installation.
WebSphere 8 Stop Application Server	Stops the specified application server before patching the WebSphere 8 installation.
Verify All Java Processes Stopped	Verifies that all Java processes relevant to the WebSphere services on the specified target have been stopped.
WebSphere 8 Patching Extract Archive	First checks to ensure that the archive file exists. Then, based on the archive extension, extracts the archive to the specified directory.
Verify Install Manager Exists	Verifies that an IBM Installation Manager instance exists on the specified target machine.
WebSphere 8 Apply Patches	Uses the IBM Installation Manager to apply the cumulative patches to the specified WebSphere 8 installation.
WebSphere 8 Start Server	Starts the stand-alone application server.
WebSphere 8 Cleanup Downloaded Files	Removes all temporary downloaded files and archives.
Discover WebSphere	Examines the target server's physical environment to discover information about WebSphere 8 cells, clusters, and managed servers. <p>Note: Discovery is ONLY additive. It will not remove instances or databases currently in your environment. It is your HP DMA administrator's responsibility to delete content that is no longer in use.</p>

Steps for Patch WebSphere 8 StandAlone Profile (continued)

Workflow Step	Description
WebSphere 8 Restore Config	If the patching process fails, this step is called to restore the configuration via the <code>restoreConfig</code> utility.

How to Run this Workflow

The following instructions show you how to customize and run the [Patch WebSphere 8 StandAlone Profile](#) workflow in your environment.

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Patch WebSphere 8 StandAlone Profile workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow](#)).
2. Determine the values that you will specify for the following parameters:

Parameter Name	Default Value	Required	Description
Config Backup File	no default	required	Fully qualified file path where the WebSphere BackupConfig utility will write the backup file. For example: <code>/opt/IBM/WebSphere/newbackup/backup.zip</code>
Install Manager Location	no default	required	Fully qualified file path where the WebSphere Install Manager is located. For example: <code>/usr/IBM/installManager</code> or <code>/opt/IBM/InstallManager</code>
Trust SSL Certificates	True	optional	If this parameter is set to True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
WAS Admin Password	no default	optional	If global security is enabled, this is the password for a user who belongs to a group that has permission to change the state of a specific application server.
WAS Admin User	no default	optional	If global security is enabled, this is the user account for a user who belongs to a group that has permission to change the state of a specific application server.
Web Service Password	no default	required	Password for the HP DMA Discovery web service API.
Web Service URL	no default	required	URL for the HP DMA Discovery web service API. For example: <code>https://example.com/4433/dma</code>

Parameter Name	Default Value	Required	Description
Web Service User	required	required	User who is capable of modifying the HP DMA managed environment by using the HP DMA Discovery web service API.
WebSphere Patch Extract Location	no default	required	Fully qualified path to the directory where the Update Installer package will be uncompressed. For example: <code>/opt/IBM/WebSphere/WebSphere_Updater</code>
WebSphere Patch File List	no default	required	Comma-separated list of fully qualified paths to the compressed WebSphere cumulative patch files on the target machine. For example: <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part1.zip,</code> <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part2.zip</code>
WebSphere Server Name	no default	required	Name of the application server that will be stopped before the patching process proceeds (for example: server1).

Tip: To avoid having to re-enter passwords whenever they change, you can create a policy to provide them to the workflow (see [How to Use a Policy to Specify Parameter Values](#) on page 54).

Note: See [Parameters for Patch WebSphere 8 StandAlone Profile](#) on page 35 for detailed descriptions of all input parameters for this workflow, including default values.

3. Create a new deployment (see [Create a Deployment](#) on page 17 for instructions).
4. On the Targets tab, specify one or more targets for this deployment.
5. Save the deployment (click **Save** in the lower right corner).
6. Run the workflow using this deployment (see [Run Your Workflow](#) on page 21 for instructions).

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an error occurs during workflow execution, the error is logged, and the workflow terminates in the FAILURE state.

Sample Scenario

It is very straightforward to run the [Patch WebSphere 8 StandAlone Profile](#) workflow. This topic shows you typical parameter values to use.

For the sample use case scenario below, global security is not enabled, and the workflow will trust any Secure Sockets Layer (SSL) certificates.

Parameter Name	Example Value	Description
Config Backup File	see description	Fully qualified file path where the WebSphere BackupConfig utility will write the backup file. For example: <code>/opt/IBM/WebSphere/newbackup/backup.zip</code>
Install Manager Location	see description	Fully qualified file path where the WebSphere Install Manager is located. For example: <code>/usr/IBM/installManager</code> or <code>/opt/IBM/InstallManager</code>
Trust SSL Certificates	True	If this parameter is set to True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
WAS Admin Password	myPwd	If global security is enabled, this is the password for a user who belongs to a group that has permission to change the state of a specific application server.
WAS Admin User	myUsername	If global security is enabled, this is the user account for a user who belongs to a group that has permission to change the state of a specific application server.
Web Service Password	myWebSvcPwd	Password for the HP DMA Discovery web service API.
Web Service URL	see description	URL for the HP DMA Discovery web service API. For example: <code>https://example.com/4433/dma</code>
Web Service User	JohnDoe	User who is capable of modifying the HP DMA managed environment by using the HP DMA Discovery web service API.
WebSphere Patch Extract Location	see description	Fully qualified path to the directory where the Update Installer package will be uncompressed. For example: <code>/opt/IBM/WebSphere/WebSphere_Upgrader</code>

Parameter Name	Example Value	Description
WebSphere Patch File List	see description	Comma-separated list of fully qualified paths to the compressed WebSphere cumulative patch files on the target machine. For example: <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part1.zip,</code> <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part2.zip</code>
WebSphere Server Name	see description	Name of the application server that will be stopped before the patching process proceeds (for example: server1).

Parameters for Patch WebSphere 8 StandAlone Profile

The following tables describe the required and optional input parameters for this workflow.

Parameters Defined in this Step: WebSphere 8 StandAlone Patching Parameter Validation

Parameter Name	Default Value	Required	Description
Config Backup File	no default	required	Fully qualified file path where the WebSphere BackupConfig utility will write the backup file. For example: <code>/opt/IBM/WebSphere/newbackup/backup.zip</code>
Install Manager Location	no default	required	Fully qualified file path where the WebSphere Install Manager is located. For example: <code>/usr/IBM/installManager</code> or <code>/opt/IBM/InstallManager</code>
Trust SSL Certificates	True	optional	If this parameter is set to True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
WAS Admin Password	no default	optional	If global security is enabled, this is the password for a user who belongs to a group that has permission to change the state of a specific application server.
WAS Admin User	no default	optional	If global security is enabled, this is the user account for a user who belongs to a group that has permission to change the state of a specific application server.
Web Service Password	no default	required	Password for the HP DMA Discovery web service API.
Web Service URL	no default	required	URL for the HP DMA Discovery web service API. For example: <code>https://example.com/4433/dma</code>
Web Service User	no default	required	User who is capable of modifying the HP DMA managed environment by using the HP DMA Discovery web service API.
WebSphere Patch Extract Location	no default	required	Fully qualified path to the directory where the Update Installer package will be uncompressed. For example: <code>/opt/IBM/WebSphere/WebSphere_Updater</code>

Parameters Defined in this Step: WebSphere 8 StandAlone Patching Parameter Validation (continued)

Parameter Name	Default Value	Required	Description
WebSphere Patch File List	no default	required	Comma-separated list of fully qualified paths to the compressed WebSphere cumulative patch files on the target machine. For example: <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part1.zip,</code> <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part2.zip</code>
WebSphere Server Name	no default	required	Name of the application server that will be stopped before the patching process proceeds (for example: server1).

Patch WebSphere 8 Network Deployment Cell

This workflow installs cumulative fixes and updates for WebSphere 8 application server.

The workflow supports the patching of WebSphere 8 running in a Network Deployment topology.

Fixes and updates are installed by the workflow using an existing instance of the IBM Installation Manager software, which must exist on each target machine.

This workflow takes into account the multiple components related to a Network Deployment implementation and makes sure that all components (`dmgr`, `nodeagent`, and application servers) are stopped before proceeding with the patching.

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow	Instructions for running this workflow in your environment
Sample Scenario	Examples of typical parameter values for this workflow
Parameters	List of input parameters for this workflow

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run this workflow:

1. You are using HP Server Automation (SA) version 9.13 with HP DMA Hotfix 2 (or later).
2. You have installed the HP DMA Application Server Patching solution pack.
3. You have a valid HP Software support contract for this solution pack.
4. You have installed and downloaded the available SA patches on your SA Core.
5. IBM Installation Manager software exists on each target machine.

For specific operating system versions supported by each workflow, see the *HP Database and Middleware Automation version 9.15 Support Matrix* available on the HP Software Product Manuals web site:

<http://h20230.www2.hp.com/selfsolve/manuals>

Dependencies:

- This workflow runs as root.
- The workflow supports the patching of WebSphere 8 running in a Network Deployment topology.
- When patching a Network Deployment Cell, the workflow must be set up to first patch the server that runs the Deployment Manager process and then patch the other nodes in the cell.
- The workflow requires that an instance of IBM Installation Manager be installed on each of the target servers.

For more information about prerequisites for WebSphere 8 patching, refer to the [WebSphere 8 Product Documentation](#).

How this Workflow Works

The following information describes how the [Patch WebSphere 8 Network Deployment Cell](#) workflow works:

Overview

This workflow installs cumulative fixes and updates for WebSphere 8 application server.

The workflow supports the patching of WebSphere 8 running in a Network Deployment topology.

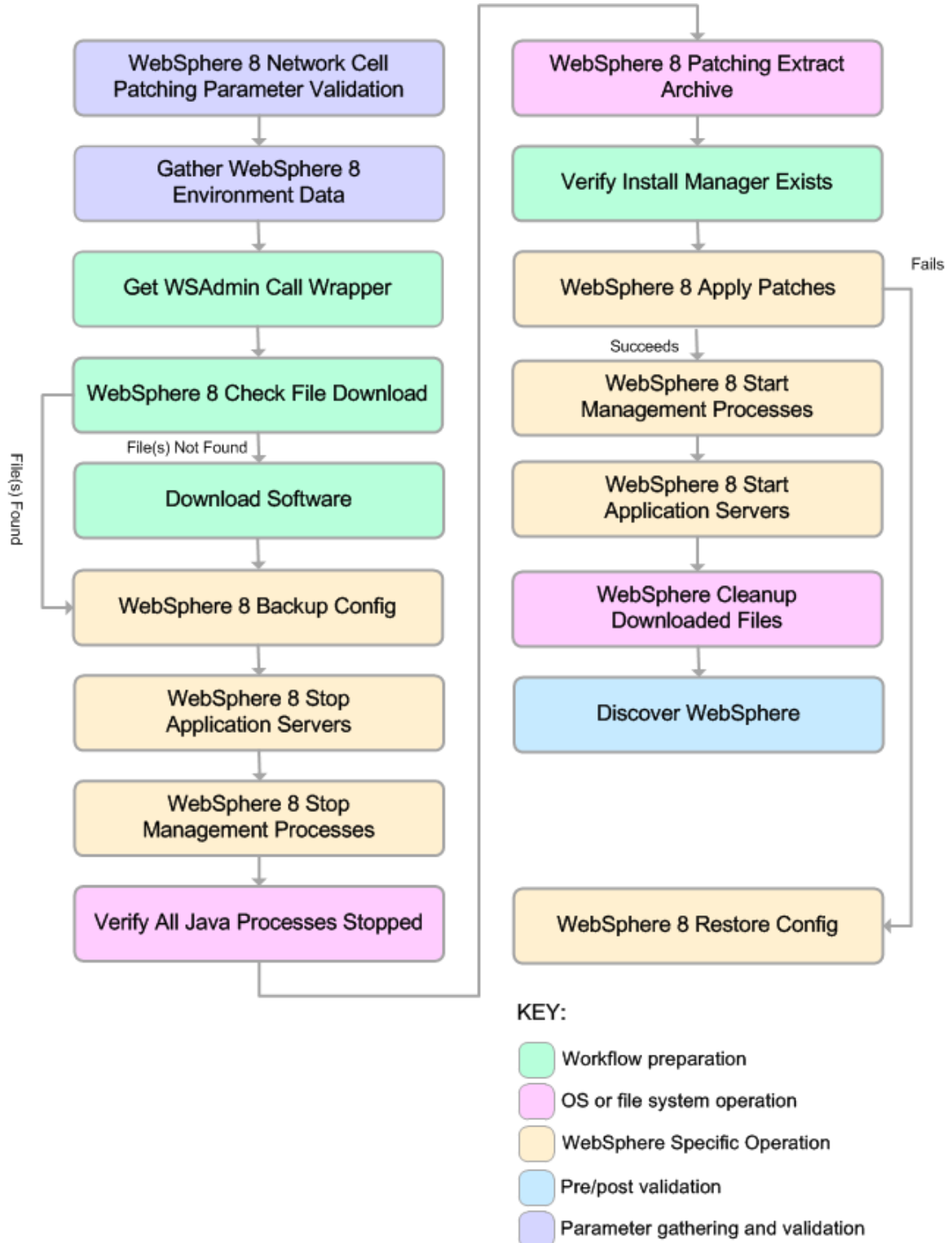
Validation Checks Performed

The validation centers on the input parameters:

- The input parameters have the proper syntax (no special characters or spaces).
- Specified files exist and have valid permissions.

Steps Executed

The Patch WebSphere 8 Network Deployment Cell workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow restores the configuration, cleans up files as necessary, reports a failure, and skips all subsequent steps.



Steps for Patch WebSphere 8 Network Deployment Cell

Workflow Step	Description
WebSphere 8 Network Cell Patching Parameter Validation	Prepares the parameters needed to patch WebSphere 8.
Gather WebSphere 8 Environment Data	Determines what the Network Deployment cell looks like.
Get WSAAdmin Call Wrapper	Creates the necessary call wrapper to call <code>wsadmin</code> to execute certain operations within the WebSphere 8 environment.
WebSphere 8 Check File Download	Checks for the existence of a file on the target machine before downloading that file from the HP DMA server. For each file in the list: <ol style="list-style-type: none"> 1. The step determines whether the file is in the expected location on the target machine. 2. If the file is not in the expected location, the step adds that file to a list of files that need to be downloaded.
Download Software	Automates the transfer of files from the software repository to individual managed servers for use in downstream workflow steps.
WebSphere 8 Backup Config	Uses the <code>backupConfig</code> utility to backup the WebSphere configurations for the specified WebSphere 8 installation.
WebSphere 8 Stop Application Servers	Stops all application servers first before patching the installation of WebSphere.
WebSphere 8 Stop Management Processes	First stops <code>nodeagents</code> . If there is a <code>dmgr</code> process running, the step will then stop that process before patching the WebSphere 8 installation.
Verify All Java Processes Stopped	Verifies that all Java processes relevant to the WebSphere services on the specified target have been stopped.
WebSphere 8 Patching Extract Archive	First checks to ensure that the archive file exists. Then, based on the archive extension, extracts the archive to the specified directory.
Verify Install Manager Exists	Verifies that an IBM Installation Manager instance exists on each of the specified target machines.
WebSphere 8 Apply Patches	Uses the IBM Installation Manager to apply the cumulative patches to the specified WebSphere 8 installation.
WebSphere 8 Start Management Processes	First starts the <code>dmgr</code> process first if one exists. Then, starts the <code>nodeagent</code> process.

Steps for Patch WebSphere 8 Network Deployment Cell (continued)

Workflow Step	Description
WebSphere 8 Start Application Servers	Starts all application servers.
WebSphere 8 Cleanup Downloaded Files	Removes all temporary downloaded files and archives.
Discover WebSphere	Examines the target server's physical environment to discover information about WebSphere 8 cells, clusters, and managed servers. Note: Discovery is ONLY additive. It will not remove instances or databases currently in your environment. It is your HP DMA administrator's responsibility to delete content that is no longer in use.
WebSphere 8 Restore Config	If the patching process fails, this step is called to restore the configuration via the <code>restoreConfig</code> utility.

For parameter descriptions and defaults, see [Parameters for Patch WebSphere 8 Network Deployment Cell](#).

How to Run this Workflow

The following instructions show you how to customize and run the [Patch WebSphere 8 Network Deployment Cell](#) workflow in your environment.

Note: Before following this procedure, review the [Prerequisites for this Workflow](#) on page 38, and ensure that all requirements are satisfied.

To use the Patch WebSphere 8 Network Deployment Cell workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow](#)).
2. Determine the values that you will specify for the following parameters:

Parameter Name	Default Value	Required	Description
Config Backup File	no default	required	Fully qualified file path where the WebSphere BackupConfig utility will write the backup file. For example: <code>/opt/IBM/WebSphere/newbackup/backup.zip</code>
Enable Security	false	required	Enables administrative security. Must be set to either true or false. If Enable Security is true, the WAS Admin User and WAS Admin Password parameters must have values.
Install Manager Location	no default	required	Fully qualified file path where the WebSphere Install Manager is located. For example: <code>/usr/IBM/installManager</code> or <code>/opt/IBM/InstallManager</code>
Trust SSL Certificates	True	optional	If this parameter is set to True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
WAS Admin Password	no default	optional	If global security is enabled, this is the password for a user who belongs to a group that has permission to change the state of a specific application server.
WAS Admin User	no default	optional	If global security is enabled, this is the user account for a user who belongs to a group that has permission to change the state of a specific application server.
Web Service Password	no default	required	Password for the HP DMA Discovery web service API.

Parameter Name	Default Value	Required	Description
Web Service URL	no default	required	URL for the HP DMA Discovery web service API. For example: <code>https://example.com/4433/dma</code>
Web Service User	required	required	User who is capable of modifying the HP DMA managed environment by using the HP DMA Discovery web service API.
WebSphere Patch Extract Location	no default	required	Fully qualified path to the directory where the Update Installer package will be uncompressed. For example: <code>/opt/IBM/WebSphere/WebSphere_Upgrader</code>
WebSphere Patch File List	no default	required	Comma-separated list of fully qualified paths to the compressed WebSphere cumulative patch files on the target machine. For example: <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part1.zip, /usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part2.zip</code>

Tip: To avoid having to re-enter passwords whenever they change, you can create a policy to provide them to the workflow (see [How to Use a Policy to Specify Parameter Values](#) on page 54).

Note: See [Parameters for Patch WebSphere 8 Network Deployment Cell](#) on page 46 for detailed descriptions of all input parameters for this workflow, including default values.

3. Create a new deployment (see [Create a Deployment](#) on page 17 for instructions).
4. On the Targets tab, specify one or more targets for this deployment.
5. Save the deployment (click **Save** in the lower right corner).
6. Run the workflow using this deployment (see [Run Your Workflow](#) on page 21 for instructions).

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an error occurs during workflow execution, the error is logged, and the workflow terminates in the FAILURE state.

Sample Scenario

It is very straightforward to run the [Patch WebSphere 8 Network Deployment Cell](#) workflow. This topic shows you typical parameter values to use.

For the sample use case scenario below, security is enabled, and the workflow will trust any Secure Sockets Layer certificates.

Parameter Name	Example Value	Description
Config Backup File	see description	Fully qualified file path where the WebSphere BackupConfig utility will write the backup file. For example: <code>/opt/IBM/WebSphere/newbackup/backup.zip</code>
Enable Security	true	Enables administrative security. Must be set to either true or false. If Enable Security is true, the WAS Admin User and WAS Admin Password parameters must have values.
Install Manager Location	see description	Fully qualified file path where the WebSphere Install Manager is located. For example: <code>/usr/IBM/installManager</code> or <code>/opt/IBM/InstallManager</code>
Trust SSL Certificates	True	If this parameter is set to True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
WAS Admin Password	myPwd	If global security is enabled, this is the password for a user who belongs to a group that has permission to change the state of a specific application server.
WAS Admin User	myUsername	If global security is enabled, this is the user account for a user who belongs to a group that has permission to change the state of a specific application server.
Web Service Password	myWebSvcPwd	Password for the HP DMA Discovery web service API.
Web Service URL	see description	URL for the HP DMA Discovery web service API. For example: <code>https://example.com/4433/dma</code>
Web Service User	JohnDoe	User who is capable of modifying the HP DMA managed environment by using the HP DMA Discovery web service API.
WebSphere Patch Extract Location	see description	Fully qualified path to the directory where the Update Installer package will be uncompressed. For example: <code>/opt/IBM/WebSphere/WebSphere_Upgrader</code>

Parameter Name	Example Value	Description
WebSphere Patch File List	see description	Comma-separated list of fully qualified paths to the compressed WebSphere cumulative patch files on the target machine. For example: <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part1.zip,</code> <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part2.zip</code>

Parameters for Patch WebSphere 8 Network Deployment Cell

The following tables describe the required and optional input parameters for this workflow.

Parameters Defined in this Step: WebSphere 8 Network Cell Patching Parameter Validation

Parameter Name	Default Value	Required	Description
Config Backup File	no default	required	Fully qualified file path where the WebSphere BackupConfig utility will write the backup file. For example: <code>/opt/IBM/WebSphere/newbackup/backup.zip</code>
Enable Security	false	required	Enables administrative security. Must be set to either true or false. If Enable Security is true, the WAS Admin User and WAS Admin Password parameters must have values.
Install Manager Location	no default	required	Fully qualified file path where the WebSphere Install Manager is located. For example: <code>/usr/IBM/installManager</code> or <code>/opt/IBM/InstallManager</code>
Trust SSL Certificates	True	optional	If this parameter is set to True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
WAS Admin Password	no default	optional	If global security is enabled, this is the password for a user who belongs to a group that has permission to change the state of a specific application server.
WAS Admin User	no default	optional	If global security is enabled, this is the user account for a user who belongs to a group that has permission to change the state of a specific application server.
Web Service Password	no default	required	Password for the HP DMA Discovery web service API.
Web Service URL	no default	required	URL for the HP DMA Discovery web service API. For example: <code>https://example.com/4433/dma</code>
Web Service User	no default	required	User who is capable of modifying the HP DMA managed environment by using the HP DMA Discovery web service API.
WebSphere Patch Extract Location	no default	required	Fully qualified path to the directory where the Update Installer package will be uncompressed. For example: <code>/opt/IBM/WebSphere/WebSphere_Upgrader</code>

Parameters Defined in this Step: WebSphere 8 Network Cell Patching Parameter Validation (continued)

Parameter Name	Default Value	Required	Description
WebSphere Patch File List	no default	required	Comma-separated list of fully qualified paths to the compressed WebSphere cumulative patch files on the target machine. For example: <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part1.zip,</code> <code>/usr/IBM/patches/8.0.0-WS-WAS-FP0000003-part2.zip</code>

Tips and Best Practices

This portion of the document contains a collection of tips and best practices that will enable you to use HP DMA more effectively. It contains the following topics:

[How a Solution Pack is Organized](#) on next page

[How to Expose Additional Workflow Parameters](#) on page 53

[How to Use a Policy to Specify Parameter Values](#) on page 54

[How to Import a File into the Software Repository](#) on page 57

How a Solution Pack is Organized

Note: This topic uses the Run Oracle Compliance Audit workflow in the Database Compliance solution pack as an example. The information provided here, however, pertains to any solution pack.

In HP DMA, a **workflow** executes a process —such as installing a software product or checking a database instance for compliance with a specific security benchmark.

A solution pack contains one or more related workflow templates.

Each workflow template has a Documentation tab that provides detailed information about that workflow.

The screenshot displays the HP Database & Middleware Automation web interface. At the top, the navigation bar includes 'Home', 'Automation', 'Reports', 'Environment', 'Solutions', and 'Setup'. The 'Automation' section is expanded to show 'Workflows', 'Steps', 'Functions', 'Policies', 'Deployments', 'Run', 'Console', and 'History'. The main content area is titled 'Run Oracle Compliance Audit' and has tabs for 'Documentation', 'Workflow', 'Deployments', and 'Roles'. The 'Documentation' tab is active, showing a form with the following fields: Name (Run Oracle Compliance Audit), Tags, Type (OS), and Target level (Instance). Below the form is a 'Documentation' section with three sub-sections: 'Purpose', 'Description', and 'Parameters'. The 'Purpose' section states: 'Audit an Oracle Database instance for compliance with the following Center for Internet Security (CIS) benchmarks and, optionally, compare the audit results to the related PCI and SOX requirements: CIS Security Configuration Benchmark for Oracle Database Server 11g, version 1.0.1, January 2009; CIS Security Benchmark for Oracle 9i/10g, version 2.01, April 2005; Payment Card Industry (PCI) Data Security Standard Version 2.0, October 2010; Sarbanes-Oxley (SOX) Sarbanes–Oxley Act of 2002 Section 302'. The 'Description' section states: 'This workflow will audit an Oracle Database instance using CIS Level 1 and Level 2 auditing. It will then compare the results to the pertinent PCI and SOX requirements, where applicable. This audit, which runs in conjunction with the HP DMA reporting tool, can identify more than 175 compliance related problems with an Oracle database. You can view information about the audit on the Console while the audit is running. After the audit has finished, the workflow sends a summary report to each specified email address. You can also view a compliance report on the Reports page.' The 'Parameters' section is currently empty. At the bottom of the documentation area are links for 'HELP', 'PDF', and 'EDIT'. Below the documentation area is a toolbar with icons for 'DELETE', 'EXPORT', 'EXTRACT POLICY', 'DEPLOY', and 'RUN', along with 'Copy', 'Save', and 'CANCEL' buttons. The footer contains the copyright information: '© 2006–2012 Hewlett-Packard Development Company, L.P. Web Server: 9.13.0 Repository: 9.10.0'.

A workflow consists of a sequence of steps. Each step performs a very specific task. Each step includes a documentation panel that briefly describes its function.

The screenshot displays the HP Database & Middleware Automation console interface. The top navigation bar includes 'Home', 'Automation', 'Reports', 'Environment', 'Solutions', and 'Setup'. The 'Automation' section is active, showing sub-tabs for 'Workflows', 'Steps', 'Functions', 'Policies', 'Deployments', 'Run', 'Console', and 'History'. The main content area is titled 'Get Oracle Home' and features several tabs: 'General', 'Action', 'Parameters', 'History', 'Workflows', 'Solutions', and 'Roles'. The 'General' tab is selected, showing the 'Properties' section on the left and the 'Documentation' section on the right. The 'Properties' section includes fields for 'Name' (Get Oracle Home), 'Tags', 'Type' (Oracle), 'Category' (Script), and a 'Targetable' checkbox. The 'Documentation' section provides a description: 'Get the value of ORACLE_HOME from the appropriate source:', followed by a list of sources: '- The /etc/oratab or /var/opt/oracle/oratab file on UNIX' and '- The registry on Windows'. It also lists 'Dependencies: None', 'Input Parameters: None', and 'Output Parameters:' with two items: '- Oracle Home = The fully qualified name of the ORACLE_HOME' and '- Oracle SID = The Oracle server (instance) ID'. A 'Return Code' section indicates '0 = Step was successful' and '1 = Error occurred in step'. At the bottom right, there are 'Copy', 'Save', and 'CANCEL' buttons. The footer contains copyright information: '© 2006–2012 Hewlett-Packard Development Company, L.P. Web Server: 9.13.0 Repository: 9.10.0'.

Steps can have input and output parameters. Output parameters from one step often serve as input parameters to another step. Steps can be shared among workflows.

Parameter descriptions are displayed on the Parameters tab for each step in the workflow.

HP Database & Middleware Automation Server: myserver.mycompany.com User: admin Logout

Home Automation Reports Environment Solutions Setup

Workflows Steps Functions Policies Deployments Run Console History

Get Listener Names

General Action Parameters History Workflows Solutions Roles

Input parameters

Name	Value	Description
Listener Homes	<input type="text"/>	Optional: Comma delimited list of fully qualified path
Oracle SIDs	<input type="text"/>	Optional: Comma delimited list of ORACLE_SIDs, a

[NEW PARAMETER](#)

Output parameters

Name	Description
Listener Homes	Comma separated list of homes the listeners are running out of.
Listener ORA Files	Comma separated list of listener.ora files used by each Listener.
Listener Users	Comma separated list of users the listeners are running as.
Listeners	Comma separated list of listeners running from this ORACLE_HOME.

[NEW PARAMETER](#)

Copy Save or CANCEL

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Web Server: 9.13.0 Repository: 9.10.0

Parameter descriptions are also displayed on the Workflow tab for each workflow.

Get Listener Names / Oracle SIDs

Optional: Comma delimited list of ORACLE_SIDs, at least one of which a resulting listener must service. If blank, listeners are not limited to those servicing any specific ORACLE_SID.

↑ To see the parameter description here

6	Prepare Oracle Instance	7	⊖
7	Get Listener Names	8	⊖
<p>Listener Homes: <input type="text" value="Prepare Oracle Instance.Oracle Home"/></p> <p>Oracle SIDs: <input type="text" value="Get Oracle Home.Oracle SID"/></p>			
8	Audit Unix or Linux OS Specific Settings	9	⊖
9	Audit Installation and Patch	10	⊖

Click here

Parameter descriptions are also displayed on the Parameters tab in the deployment (organized by step).

hp Database & Middleware Automation Server: myserver.mycompany.com User: admin Logout

Home Automation Reports Environment Solutions Setup

Workflows Steps Functions Policies Deployments Run Console History

Run Oracle Compliance CIS

Targets Parameters Roles

Gather Parameters for Oracle Compliance

Compliance Type: Text

Compliance type that will be audited by the workflow. Compliance types supported: CIS, PCI, SOX. Will be defaulted to CIS.

Excluded Compliance Checks: Text

Optional: Checks to exclude from of Compliance Checks

Inventory Files: Text

Optional: Comma separated list of fully qualified Oracle inventory files. If not specified, default to /etc/orainst.loc, /var/opt/oracle/orainst.loc, or %ProgramFiles%\Oracle\inventory.

Gather Advanced Parameters for Oracle Compliance

Email Addresses to Receive Report: Text

*Optional. Provided an email address or multiple email addresses separated by commas without spaces that you would like to receive an email of the results of the compliance tests run against the target specified.

DELETE RUN Restore defaults Copy Save or CANCEL

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Web Server: 9.13.2 Repository: 9.10.0

Note: The workflow templates included in this solution pack are read-only and cannot be deployed. To use a workflow template, you must first create a copy of the template and then customize that copy for your environment.

How to Expose Additional Workflow Parameters

Each workflow in this solution pack has a set of input parameters. Some are required and some are optional. To run a workflow in your environment, you must specify values for a subset of these parameters when you create a deployment.

By default, only a few of the input parameters for each workflow are visible on the Deployment page, and the rest are hidden. In order to specify a value for a parameter that is currently hidden, you must first expose that parameter by changing its mapping in the workflow editor.

To expose a hidden workflow parameter:

1. In the HP DMA web interface, go to Automation > Workflows.
2. From the list of workflows, select a deployable workflow.
3. Go to the Workflow tab.
4. In the list of steps below the workflow diagram, click the ► (blue arrow) to the immediate left of the pertinent step name. This expands the list of input parameters for this step.
5. For the parameter that you want to expose, select - User Selected - from the drop-down list.
For example:

Step	Name	Required Result	Next
▼ 1	Gather Parameters for Oracle Compliance		2
	Compliance Type:	- User selected -	ⓘ
	Excluded Compliance Checks:	- User selected -	ⓘ
	Inventory Files:	- User selected -	ⓘ

6. Repeat steps 4 and 5 for all the parameters that you would like to specify in the deployment.
7. Click **Save** in the lower right corner.

How to Use a Policy to Specify Parameter Values

It is sometimes advantageous to provide parameter values by using a policy rather than explicitly specifying the values in a deployment. This approach has the following advantages:

- The policy can be used in any deployment.
- It is faster and less error-prone than specifying parameter values manually.
- For parameter values that change frequently—for example, passwords that must be changed regularly—you only need to update them in one place.

To establish a policy, you can either [Create a Policy](#) or [Extract a Policy](#) from a workflow.

After you establish the policy, you must [Reference the Policy in the Deployment](#).

For more information, see the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library.

Create a Policy

The first step in this approach is to create a policy that provides parameter values. There are two ways to do this: (1) create a new policy, and define all attributes manually (as shown here) or (2) extract a policy from a workflow (see [Extract a Policy](#) on next page).

To create a policy that provides parameter values:

1. In the HP DMA web UI, go to Automation > Policies.
2. Click **New Policy**.
3. In the **Name** box, specify the name of the policy
4. For each parameter value that you want to provide using this policy, perform the following actions on the Attributes tab:
 - a. From the drop-down list, select the type of attribute:
 - A Text attribute contains simple text that users can view while deploying and running workflows.
 - A List attribute contains a comma-separated list of values (or a large amount of text not suitable for a Text attribute).
 - A Password attribute contains simple text, but the characters are masked so that users cannot see the text.
 - b. In the text box to the left of the Add button, specify the name of the attribute.

For your convenience, this name should be similar to the parameter name used in the pertinent workflow (or workflows).
 - c. Click **Add**.
 - d. In the new text box to the right of the attribute's name, enter a value for this attribute.

To remove an attribute, click the **Remove** button.
5. On the Roles tab, grant Read and Write permission to any additional users and groups who will

be using this policy. By default, any groups to which you belong have Read and Write permission.

6. Click the **Save** button (lower right corner).

Extract a Policy

An alternative to creating your own policy one attribute at a time is to extract the policy. This automatically creates a reusable policy that provides values for all input parameters associated with a workflow. This is a convenient way to create a policy.

To extract a policy:

1. Go to Automation > Workflows.
2. Select the Workflow that you want to work with.
3. Click the Extract Policy link at the bottom of the screen.
4. Specify values for each attribute listed.
5. *Optional:* Remove any attributes that you do not want to use.
6. *Optional:* Add any new attributes that you want to use.
7. *Optional:* On the Roles tab, select the Read box for any users or user groups that you want to be able to use this policy to provide parameter values in a Deployment. Select the Write box for any users or groups that you want to be able to modify this Policy (add or remove attributes).
8. Click **Save**.

Reference the Policy in the Deployment

After you create a policy, you can reference its attributes in a deployment.

To reference policy attributes in a deployment:

1. Create or access the deployment.

See “Deployments” in the *User Guide: Database and Middleware Automation* for details. This guide is included in the HP Server Automation documentation library (SA version 9.13 and later).
2. On the Parameters tab, perform the following steps for each parameter whose value you want to provide by referencing a policy attribute:
 - a. In the drop-down menu for that parameter, select **Policy Attribute**.
 - b. In the text box for that parameter, type any character. A drop-down list of policy attributes appears. For example:

Admin Pwd: Policy Attribute

- MS SQL: Provisioning.Virtual Server Name
- MyParameterValues.MyAdminPassword
- MyParameterValues.MyAdminUser
- MyParameterValues.MyDBUser
- MyParameterValues.MyDBUserPassword
- Oracle Compliance.Oracle Mandatory Checks
- Oracle Compliance.Oracle Recommended Checks
- Oracle Provisioning.Additional Groups
- Oracle Provisioning.Backup Directory
- Oracle Provisioning.Base
- Oracle Provisioning.Binaries Host
- Oracle Provisioning.Bit Mode

- c. From the drop-down list, select the attribute that you want to reference. For example:

Admin Pwd: Policy Attribute

3. Click **Save** to save your changes to the deployment.

How to Import a File into the Software Repository

Many HP DMA workflows are capable of downloading files from the software repository on the HP DMA server to the target server (or servers) where the workflow is running. The following procedure shows you how to import a file into the software repository so that it can be downloaded and deployed by a workflow.

HP DMA uses the HP Server Automation (HP SA) Software Library as its software repository.

Tip: Be sure to use unique file names for all files that you import into the software repository.

To import a file into the HP SA Software Library:

1. Launch the HP SA Client from the Windows Start Menu.

By default, the HP SA Client is located in Start → All Programs → HP Software → HP Server Automation Client

If the HP SA Client is not installed locally, follow the instructions under “Download and Install the HP SA Client Launcher” in the *HP Server Automation Single-Host Installation Guide*.
2. In the navigation pane in the HP SA Client, select Library → By Folder.
3. Select (or create) the folder where you want to store the file.
4. From the Actions menu, select **Import Software**.
5. In the Import Software dialog, click the **Browse** button to the right of the File(s) box.
6. In the Open dialog:
 - a. Select the file (or files) to import.
 - b. Specify the character encoding to be used from the Encoding drop-down list. The default encoding is English ASCII.
 - c. Click **Open**. The Import Software dialog reappears.
7. From the Type drop-down list, select **Unknown**.
8. If the folder where you want to store the files does not appear in the Folder box, follow these steps:
 - a. Click the **Browse** button to the right of the Folder box.
 - b. In the Select Folder window, select the import destination location, and click **Select**. The Import Software dialog reappears.
9. From the Platform drop-down list, select all the operating systems listed.
10. Click **Import**.

If one of the files that you are importing already exists in the folder that you specified, you will be prompted regarding how to handle the duplicate file. Press F1 to view online help that explains the options.
11. Click **Close** after the import is completed.

Chapter 4

Troubleshooting

These topics can help you address problems that might occur when you install and run the workflows in this solution pack:

- [Target Type](#) below
- [User Permissions and Related Requirements](#) below
- [Discovery in HP Server Automation](#) below

Target Type

In your deployment, make sure that you have specified the correct type of target. The workflow type and the target type must match. A workflow designed to run against an instance target, for example, cannot run against a server target.

User Permissions and Related Requirements

Roles define access (Read or Write) permissions for organizations, workflows, steps, policies, and deployments. Deployments have an extra permission: Execute. Users are assigned to roles, and they gain access to these items according to the permissions defined for their roles.

Roles are assigned by your HP Server Automation (SA) administrator using the SA console. See the HP Server Automation *Administration Guide* and the *User Guide: Database and Middleware Automation* for more information. Both guides are included in the HP Server Automation documentation library

Make sure that the users in your environment are assigned roles that grant them the permissions they need to accomplish their tasks. For example:

- To view a workflow, your role must have Read permission for that workflow.
- To view a deployment, your role must have Read permission for that deployment.
- To edit a workflow, your role must have Write permission for that workflow.
- To run a deployment, your role must have Execute permission for that deployment.

Permissions determine what features and functions are available and active in the HP DMA UI. For a detailed breakdown, see the *User Guide: Database and Middleware Automation*.

Discovery in HP Server Automation

HP DMA uses a process called “discovery” to find information about the servers, networks, and database instances on target machines in your managed environment.

In HP Server Automation, you must explicitly initiate the process of discovery—it is not automatic. Refer to the *User Guide: Database and Middleware Automation* for instructions. This guide is included in the SA documentation library.

Glossary

B

bridged execution

A bridged execution workflow includes some steps that run on certain targets and other steps that run on different targets. An example of a bridged execution workflow is Extract and Refresh Oracle Database via RMAN (in the Database Refresh solution pack). This workflow extracts the contents of a database on one target (the Source) and creates a new database with the same contents on another target (the Destination). This workflow is useful when you want to clone a database - for example, to move it from a traditional IT infrastructure location into a private cloud. Bridged execution workflows are supported on HP Server Automation version 9.11 (and later).

C

cross-platform

Cross-platform database refresh involves converting the data from one type of byte ordering to another. This is necessary, for example, if you want to load a database dump file on a little-endian Linux target that was created on a big-endian Solaris server.

D

deployment

Deployments associate a workflow with a target environment in which a workflow runs. You can customize a deployment by specifying values for any workflow

parameters that are designated - User Selected - in the workflow. You must save a deployment before you can run the workflow. You can re-use a saved deployment as many times as you like.

destination

In a database refresh scenario, the contents of a database dump file are loaded into the DESTINATION database.

DESTINATION

In a database refresh scenario, the contents of a database dump file are loaded into the DESTINATION database.

I

input parameters

A workflow has a set of required parameters for which you must specify a value. The required parameters are a subset of all the parameters associated with that workflow. The remaining parameters are considered optional. You can specify a value for an optional parameter by first exposing it using the workflow editor and then specifying the value when you create a deployment.

M

mapping

An input parameter is said to be "mapped" when its value is linked to an output parameter from a previous step in the workflow or to a metadata field. Mapped parameters are not visible on the Deployment page. You can "unmap" a parameter by specifying - User Selected - in the workflow editor. This parameter will

then become visible on the Deployment page.

O

Oracle Data Pump

Oracle Data Pump is a utility that enables you to move data or metadata from one database to another. You can use Data Pump to move a complete database or a subset of a database.

P

parameters

Parameters are pieces of information - such as a file system path or a user name - that a step requires to carry out its action. Values for parameters that are designated User Selected in the workflow can be specified in the deployment. Parameters that are marked Enter at Runtime in the deployment must be specified on the target system when the workflow runs.

R

raw devices

In Sybase ASE version 15, you can create and mount database devices on raw bound devices. This enables Sybase ASE to use direct memory access from your address space to the physical sectors on the disk. This can improve performance by reducing memory copy operations from the user address space to the operating system kernel buffers.

Recovery Manager (RMAN)

Oracle Recovery Manager (RMAN) is a backup and recovery tool included in Oracle Database Enterprise Edition (and related products). RMAN enables you to efficiently backup and restore data files, control files, server parameter files, and archived redo log files. It provides block-

level corruption detection during both the backup and restore phases. It is optimized for performance and space consumption.

S

software repository

The software repository is where the workflow will look for any required files that are not found on the target server. If you are using HP DMA with HP Server Automation (SA), this repository is the SA Software Library.

source

In a database refresh scenario, the contents of the SOURCE database are extracted and stored in a file (or multiple files).

SOURCE

In a database refresh scenario, the contents of the SOURCE database are extracted and stored in a file (or multiple files).

source database

In the context of MS SQL database refresh, the "source database" is the database from which the backup file is created.

steps

Steps contains the actual code used to perform a unit of work detailed in a workflow.

T

target instance

In the context of MS SQL database refresh, the term "target instance" refers to the SQL Server instance where the database that will be restored resides.

W

workflow

A workflow automates the process followed for an operational procedure. Workflows contain steps, which are linked together to form business logic for a common task. Workflows connect existing tasks in order to perform a new business process by building on existing best practices and processes.

workflow editor

The workflow editor is the tool that you use to assemble steps into workflows. You can map each input parameter to output parameters of previous steps or built-in metadata (such as the server name, instance name, or database name). You can also specify User Selected to expose a parameter in the deployment; this enables the person who creates the deployment to specify a value for that parameter.