HP Database and Middleware Automation

For Linux and Solaris

Software Version: 10.10

WebLogic Provisioning User Guide

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Document Changes

Chapter	Version	Changes
Title Page Legal Notices	10.01	Updated version number, software release date, document release date, and copyright date range.
WebLogic Provisioning Quick Start	10.01	Updated from 10.00 to 10.01.
Title Page Legal Notices	10.10	Updated version number, software release date, document release date, and copyright date range.
About HP DMA Solution Packs	10.10	Added overview topic: About HP DMA Solution Packs.

Support

Visit the HP Software Support Online web site at:

http://www.hp.com/go/hpsoftwaresupport

This web site provides contact information and details about the products, services, and support that HP Software offers.

HP Software online support provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the support web site to:

- Search for knowledge documents of interest

- Submit and track support cases and enhancement requests

- Download software patches

- Manage support contracts

- Look up HP support contacts

- Review information about available services

- Enter into discussions with other software customers

- Research and register for software training

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http://h20229.www2.hp.com/passport-registration.html

To find more information about access levels, go to:

http://h20230.www2.hp.com/new_access_levels.jsp

Contents

About HP DMA Solution Packs

HP Database and Middleware Automation (HP DMA) software automates administrative tasks like provisioning and configuration, compliance, patching, and release management for databases and application servers. When performed manually, these day-to-day operations are error-prone, time consuming, and difficult to scale.

HP DMA automates these daily, mundane, and repetitive administration tasks that take up 60-70% of a database or application server administrator's day. Automating these tasks enables greater efficiency and faster change delivery with higher quality and better predictability.

HP DMA provides role-based access to automation content. This enables you to better utilize resources at every level:

- End-users can deliver routine, yet complex, DBA and middleware tasks.

- Operators can execute expert level tasks across multiple servers including provisioning, patching, configuration, and compliance checking.

- Subject matter experts can define, enforce, and audit full stack automation across network, storage, server, database, & middleware.

An HP DMA workflow performs a specific automated task—such as provisioning database or application servers, patching database or application servers, or checking a database or application server for compliance with a specific standard. You specify environment-specific information that the workflow requires by configuring its parameters.

Related HP DMA workflows are grouped together in solution packs. When you purchase or upgrade HP DMA content, you are granted access to download specific solution packs.

Audience

This solution is designed for:

- IT architects and engineers who are responsible for planning, implementing, and maintaining application-serving environments using Oracle® WebLogic Server version 11g or 12c

- Engineers who are implementing—or planning to implement—HP Database and Middleware Automation (HP DMA)

To use this solution effectively, you should be familiar with WebLogic 11g or 12c and its requirements (see links to the WebLogic Product Documentation on page 110).

Document Map

The following table shows you how to navigate this guide:

Topic	Description
The WebLogic Provisioning Solution	General information about this solution, including what it contains and what it does.
WebLogic Provisioning Quick Start	A step-by-step tutorial that shows you how to run the workflows to provision WebLogic—using the Provision WebLogic Software workflow as an example.
Workflow Details	Information about the WebLogic 11g and 12c workflows included in this solution, including: prerequisites, how it works, how to run it, sample scenarios, and a list of input parameters.
Reference Information	Links to current WebLogic 11g and 12c product documentation and additional HP DMA documentation.
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.

- 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.

- A **solution pack** contains a collection of related workflows and the steps, functions, and policies that implement each workflow.

  More precisely, solution packs contain **workflow templates**. These are read-only versions of the workflows that cannot be deployed. To run a workflow included in a solution pack, you must first create a deployable copy of the workflow template and then customize that copy for your environment.

- The umbrella term **automation items** is used to refer to those items to which role-based permissions can be assigned. Automation items include workflows, deployments, steps, and policies.

  Organizations also have role-based permissions. Servers, instances, and databases inherit their role-based permissions from the organization in which the server resides.

- 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.

- An **organization** is a logical grouping of servers. You can use organizations to separate development, staging, and production resources—or to separate logical business units. Because user security for running workflows is defined at the organization level, organizations should be composed with user security in mind.

Additional terms are defined in the Glossary on page 123.

Chapter 1

The WebLogic Provisioning Solution

The WebLogic provisioning solution provides tools that you can use to provision many features of a WebLogic 11g or 12c environment. These tools enable you to:

- Provision the WebLogic 11g or 12c software on the target host servers.

- Create a Node Manager to control the different WebLogic 11g or 12c components.

- Provision the Administration Server.

- Create a WebLogic 11g or 12c domain.

- Provision Managed Servers.

- Control whether you want logins to be via the more secure SSL or with customized keystores and truststores.

- Create a cluster of Managed Servers.

- Control whether the cluster message mode is unicast or multicast.

- Expand the WebLogic 11g or 12c domain across multiple hosts.

The following reference architecture shows a simple WebLogic configuration:

Oracle WebLogic 11g or 12c Provisioning
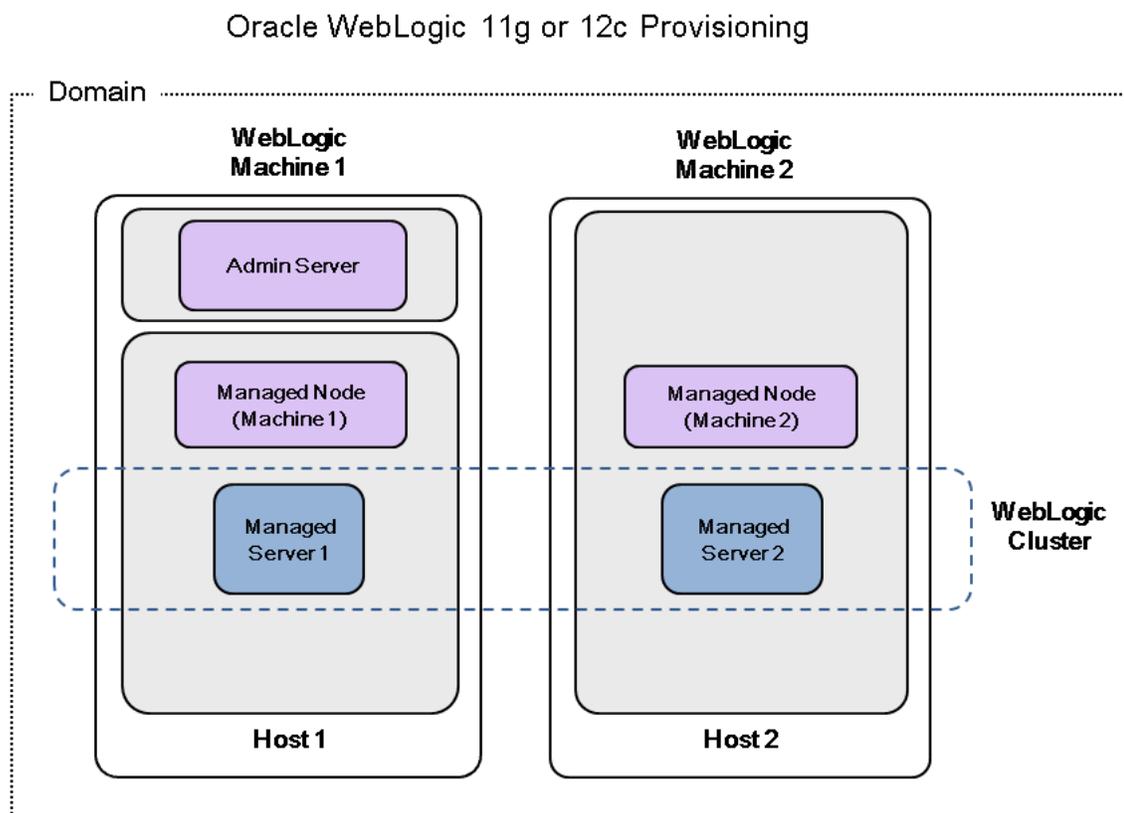
By consistently using the tools provided in this solution, you can quickly, efficiently, and accurately set up your entire WebLogic 11g or 12c environment. You maintain flexibility over the architecture by configuring environment-specific information through the input parameters.

What this Solution Includes

The Application Server Provisioning solution pack contains the following WebLogic 11g or 12c provisioning workflows:

Workflow Name	Purpose
Provision WebLogic Software	This workflow installs a new instance of Oracle WebLogic Server versions 11g or 12c onto the target host server (or servers) in silent mode with a response file. Either the native installer (the OS-specific package installer) or generic installer is used.
Provision WebLogic Domain and Admin Server	This workflow creates a WebLogic domain and Administration Server from an existing installation of WebLogic.
Provision WebLogic Managed Servers	This workflow creates a configuration for a WebLogic Managed Server (or servers) from an existing installation and domain of WebLogic.
Provision WebLogic Cluster	This workflow creates a WebLogic cluster configuration from an existing installation and domain of WebLogic and adds the existing Managed Servers to the cluster configuration.
Increase WebLogic Domain Span	This workflow increases the span of a WebLogic domain by adding other hosts to that domain. To accomplish this it moves the Managed Server configurations and cluster configuration to the other hosts, extends the cluster, starts the Managed Servers, and starts the cluster.

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Supported Products and Platforms

Operating Systems

The WebLogic 11g and 12c provisioning workflows are supported on the following operating system platforms:

- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- Solaris

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

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

Product Hardware and Software Requirements

For WebLogic 11g and 12c hardware and software requirements, see the WebLogic Product Documentation on page 110.

HP DMA Hardware Requirements

For HP DMA server hardware requirements, see the *HP DMA Installation Guide* and the *HP DMA Release Notes*.

HP DMA Software Requirements

This solution requires HP DMA version 10.10 (or later).

Prerequisites

The following prerequisites must be satisfied before you can run the WebLogic 11g and 12c provisioning workflows in this solution pack.

Database and Middleware Automation

You have installed the Application Server Provisioning Solution Pack.

Memory

You have a minimum of 1 GB RAM, although Oracle recommends at least 2 GB of RAM.

Hard disk drive

A complete installation (including SDKs) requires approximately 3.9 GB of disk space. This includes temporary disk space that is needed during installation. Depending on the components you choose to install, and the installer that you are using, less disk space may be needed.

Processor

You have a 1-GHz (or faster) CPU.

For more information about prerequisites for WebLogic 11g and 12c, refer to the WebLogic Product Documentation

Chapter 2

WebLogic Provisioning Quick Start

This tutorial shows you how to provision WebLogic 11g or 12c using HP Database and Middleware Automation.

The tutorial will guide you through the following basic steps to import the Application Server Provisioning Solution Pack and to run the Provision WebLogic Software workflow:

1. Import the Solution Pack on the next page

2. Create a Deployable Workflow on page 21

3. Create a Deployment on page 22

4. Run Your Workflow on page 26

5. View the Results on page 28

You can follow the same steps to run the other WebLogic provisioning workflows.

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.

See Parameters for Provision WebLogic Software on page 49 for descriptions of available input parameters, including default values.

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 provisioning workflows work and how you can customize them for your environment, see the Workflow Details on page 30.

Import the Solution Pack

The following instructions assume that you have purchased a license for the HP DMA solution pack that you want to import.

The HP DMA 10.10 solution packs are included on the HP DMA 10.10 installation media. They are located in the following folders:

- The `DMA_10.10_Server_and_Client` folder contains the Discovery solution pack.

  The Discovery solution pack is not automatically installed with HP DMA. You must import it if you want to use the discovery workflows.

- The `DMA_10.10_Database_Solution_Packs` folder contains all of the database solution packs (provisioning, advanced provisioning, patching, advanced patching, compliance, refresh, and release management).

- The `DMA_10.10_Middleware_Solution_Packs` folder contains all of the application server solution packs (provisioning, patching, configuration management, and release management).

> **Note:** Always check to see if there are more recent versions of the HP DMA solution packs available online. Due to frequent releases, it is likely that the solution packs provided on the installation media have since been updated.

To get the most recent version of a solution pack:

1. Go to the following web site: HP Software Support Online

2. Go to the Self-Solve tab, and sign in using your HP Passport credentials (see Support on page 4 for more information).

3. On the Advanced Search page, specify the following search criteria:

Product:	Database and Middleware Automation
Version:	All Versions
Operating System:	All Operating Systems
Document Type:	Patches

4. Click **Search**.

5. If there is a more recent version of the Application Server Provisioning solution pack, do the following:

   a. Click the link for the solution pack that you want to import (for example: AS Prov 10.x).

   b. Click the **DOWNLOAD PATCH** link, and download the ZIP file that contains the patch.

   c. From the patch ZIP file, extract the ZIP file that contains the solution pack (for example: ASProvisioning.zip).

   > **Note:** This ZIP file may be included in a larger ZIP file that contains multiple solution packs.

To import the solution pack:

1. On the system where you downloaded the solution pack, open a web browser, and go to the following address:

   `https://<HP_DMAserver>:8443/dma/login`

2. Log in to the HP DMA server using an account with Administrator capability.

3. On the Solutions > Installed tab, 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 ZIP file that you extracted earlier, and click **Open**.

5. Click **Import solution pack**.

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

To view detailed information about the solution pack, click its name in the left pane. To view a list of the workflows that the solution pack contains, go to the Workflows tab.

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 Application Server Provisioning Solution Pack.

3. Go to the Workflows tab.

4. From the list of workflows, select the Provision WebLogic Softwre 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:

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

---

[1]For more information about creating and working with workflows, see "Workflows" in the *HP DMA User Guide.* This document is available on the HP Software Product Manuals web site: http://h20230.www2.hp.com/selfsolve/manuals

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.

3. 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.

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

> **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 the Parameters for Provision WebLogic Software on page 49 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 <u>run the workflow now</u>?

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 on the right side, select the deployment that you just created.

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

3. Click the **Run workflow** button.

4. The following message is displayed:

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.

To view the progress of the workflow as the deployment proceeds, click the workflow name in the upper box on the Console page.
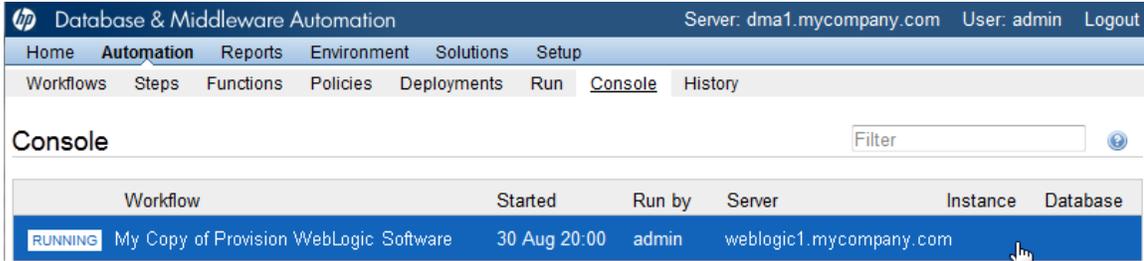
To view the outcome of a specific step, select that step in the left box in the Output area. Informational messages are displayed in the right box, and the values of any output parameters are listed.

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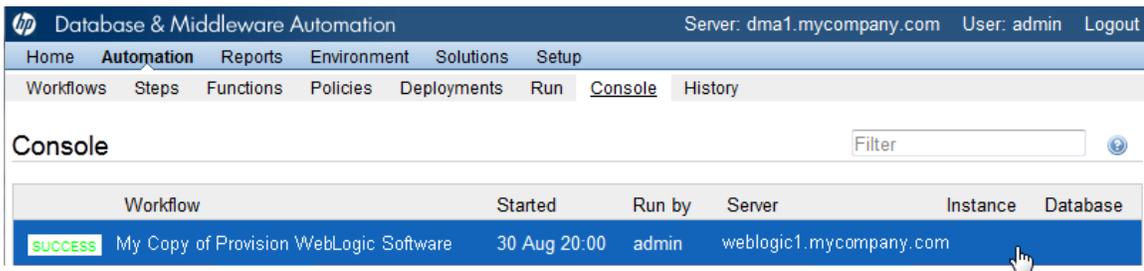
After the workflow has finished running, you can view a summary of your deployment on the History page. This page lists all the workflows that have run on this HP DMA server during the time period specified in the Filter box.

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

The 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:

- Step Output – any informational messages that were produced

- Step Errors – any errors that were reported

- Step Header – values assigned to any output parameters

- Connector Output – any informational messages related to the connection to your server management tool

- Connector Errors – any errors that were reported by the connector to your server management tool—if any errors were reported a red asterisk (*) appears on the tab

Chapter 3

Workflow Details

The Application Server Provisioning solution pack contains the following WebLogic 11g or 12c provisioning workflows. You can run these workflows ad-hoc for custom WebLogic installations or create reusable deployments to standardize WebLogic installations in your environment.

Workflow Name	Purpose
Provision WebLogic Software	This workflow installs a new instance of Oracle WebLogic Server versions 11g or 12c onto the target host server (or servers) in silent mode with a response file. Either the native installer (the OS-specific package installer) or generic installer is used.
Provision WebLogic Domain and Admin Server	This workflow creates a WebLogic domain and Administration Server from an existing installation of WebLogic.
Provision WebLogic Managed Servers	This workflow creates a configuration for a WebLogic Managed Server (or servers) from an existing installation and domain of WebLogic.
Provision WebLogic Cluster	This workflow creates a WebLogic cluster configuration from an existing installation and domain of WebLogic and adds the existing Managed Servers to the cluster configuration.
Increase WebLogic Domain Span	This workflow increases the span of a WebLogic domain by adding other hosts to that domain. To accomplish this it moves the Managed Server configurations and cluster configuration to the other hosts, extends the cluster, starts the Managed Servers, and starts the cluster.

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:

1. Ensure that all required parameters are visible. You do this by using the workflow editor.

   For simple provisioning scenarios, you can use the default values for most parameters. To use this solution's more advanced features, you will need to expose additional parameters.

2. Specify the values for those parameters. You do this when you create a deployment.

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> **Tip:** Detailed instructions are provided in the "How to Run 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 (see Supported Products and Platforms on page 15).

- 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.

> **Tip:** All parameters used by the workflows in this solution are described in the "Parameters" topic associated with each workflow.

How to Use the Workflows Together

The workflows contained in the Application Server Provisioning Solution Pack are designed to work together to accomplish your provisioning tasks. You can create multiple topologies. The following reference architecture will be used throughout this guide to show the specific task that each workflow performs:

Oracle WebLogic 11g or 12c Provisioning
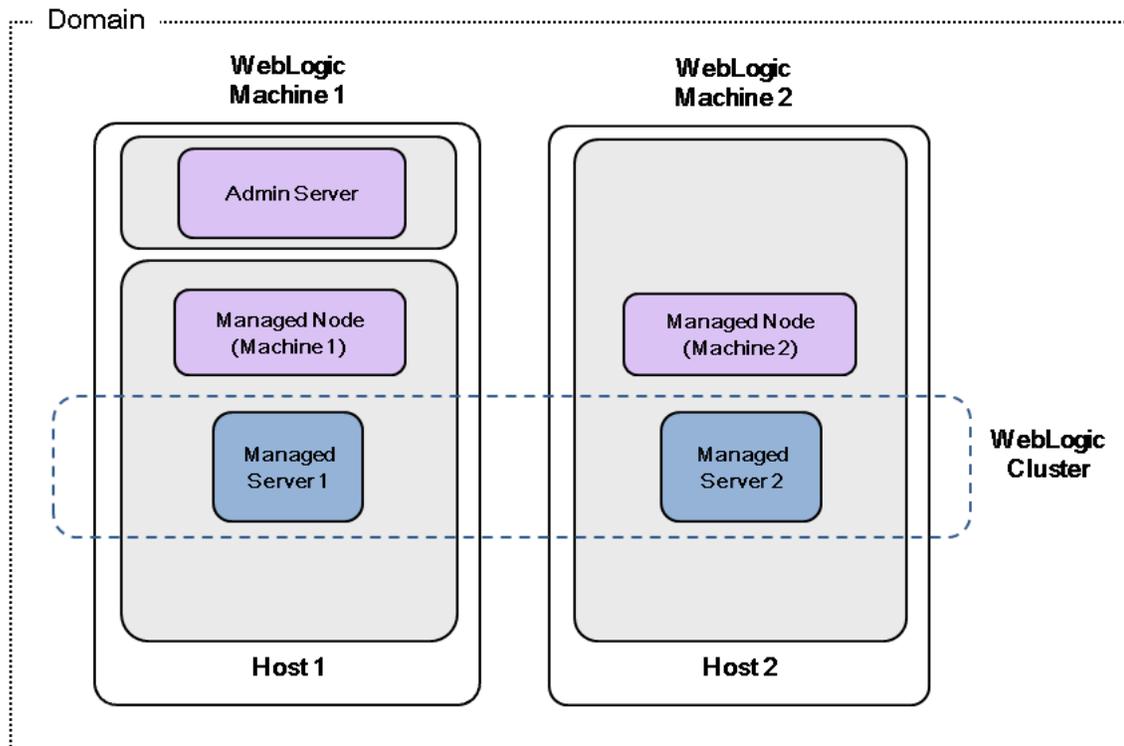
Overview of how to use the WebLogic provisioning workflows:

Three of the workflows need to be run in sequence to create your base operating environment:

- Provision WebLogic Software to provision the binaries on all the machines used in your WebLogic environment

- Provision WebLogic Domain and Admin Server to provision the WebLogic domain and Administration Server on the machine that contains the Administration Server

- Provision WebLogic Managed Servers to create the configurations for the WebLogic Managed Servers on the machine that contains the Administration Server

The other two workflows are optional based on your configuration requirements. They enable you to make your environment highly available and to balance the application load:

- Provision WebLogic Cluster to create the configuration for a WebLogic vertical or horizontal cluster

- Increase WebLogic Domain Span to increase the span of the WebLogic domain across a horizontal cluster

How to use the WebLogic **provisioning workflows together:**

Use the Provision WebLogic Software workflow to lay down the WebLogic 11g or 12c binaries on all the target host servers that you plan to use in your WebLogic environment. Once you have the binaries on the servers, you can mold them to produce multiple configurations.

After the binaries are set up, use the Provision WebLogic Domain and Admin Server workflow to set up the process server and create the domain on the target host server where your Administration Server will reside. This workflow creates the box where the WebLogic components can be placed.

After creating the process server and domain, use the Provision WebLogic Managed Servers workflow to create the configurations for the Managed Servers on the target host server where your Administration Server resides. Use the parameters to configure which Managed Servers go on which application servers. After this step you have a running environment.

You can use the Provision WebLogic Cluster workflow to put Managed Servers into a cluster configuration. You decide whether the cluster contains the Managed Servers from only one machine (a vertical cluster) or multiple machines (a horizontal cluster).

Use the Increase WebLogic Domain Span workflow if you want the domain to span more than one machine. In other words, use this workflow if you have a horizontal cluster; it is not needed if you have a vertical cluster. To increase the domain, this workflow moves the Managed Server configurations and cluster configuration to the other hosts, extends the cluster, and then starts the Managed Servers in the cluster.

> **Note:** If you do not plan to expand the domain, you should manually start the cluster after running the Provision WebLogic Cluster workflow.

Provision WebLogic Software

This workflow installs a new instance of Oracle WebLogic Server versions 11g or 12c onto the target host server (or servers) in silent mode with a response file. Either the native installer (the OS-specific package installer) or generic installer is used.

The following reference architecture diagram gives an example of what this workflow does:
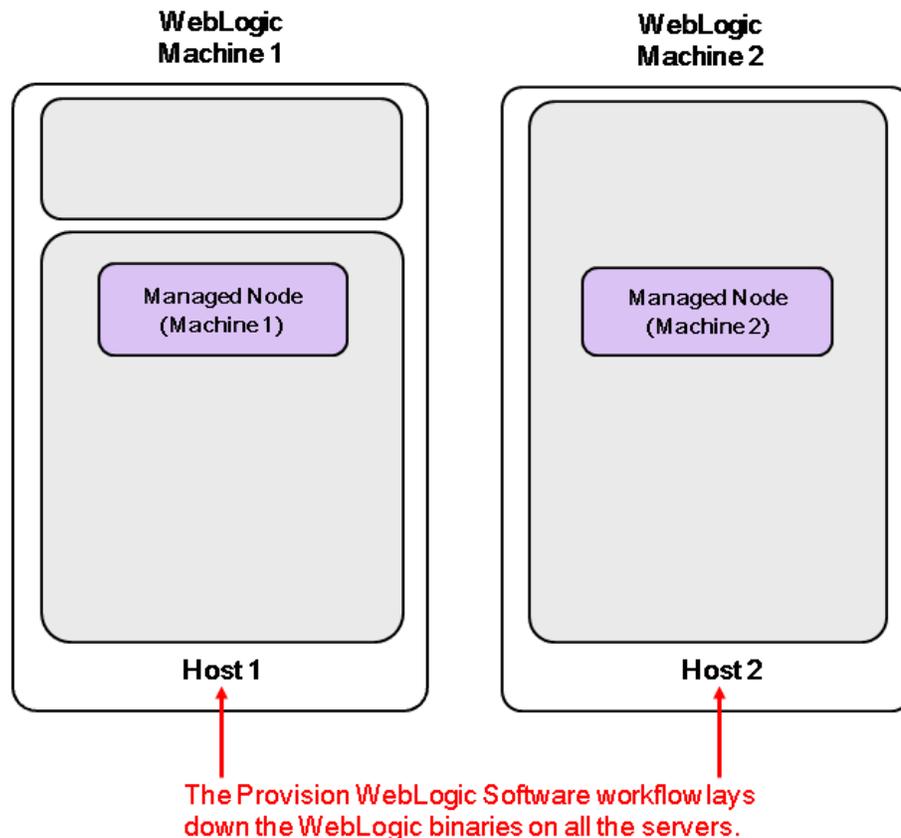
Be sure to run the WebLogic provisioning workflows in the following order to create an operational environment:

1. Run this workflow to provision the WebLogic 11g or 12c software on all the target host servers.

2. Then run the Provision WebLogic Domain and Admin Server workflow to provision the domain and the Administration Server on the designated target host server.

3. Then run the Provision WebLogic Managed Servers workflow to create the configurations for the Managed Servers on the designated target host server.

For additional information about how this workflow can be used with other WebLogic provisioning workflows see How to Use the Workflows Together on page 32.

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 the Provision WebLogic Software workflow:

- This solution requires HP DMA version 10.10 (or later).

- You have installed the Application Server Provisioning Solution Pack.

- You have a support contract and have downloaded the appropriate WebLogic 11g and 12c software to software repository or to the target machine.

- If the generic installer is to be used, you must already have a JDK (Java development kit)—supported by the version of WebLogic you are installing—installed on the target machine.

Memory

A minimum of 1 GB RAM, although Oracle recommends 2 GB of RAM.

Hard disk drive

A complete installation (including SDKs) requires approximately 3.9 GB of disk space. This includes temporary disk space that is needed during installation. Depending on the components you choose to install, and the installer that you are using, less disk space may be needed.

Processor

1-GHz (or faster) CPU

For more information about prerequisites for WebLogic 11g and 12c, refer to the WebLogic Product Documentation

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How this Workflow Works

The following information describes how the Provision WebLogic Software workflow works:

Overview

The workflow does the following:

- Prepares to provision the WebLogic software on all target machines by setting up the command to be used in subsequent steps, validating input parameters, verifying that the operating system is supported, and determining that enough temporary storage space is available.

- Checks the existence of the binary executable file, downloads it from the software repository if it doesn't exist, then changes the file permissions so that it can be executed.

- Creates the response file that is required to drive the WebLogic installation.

- Depending on the Java Home parameter:

  If the Java Home parameter is specified, the workflow uses the generic package installer—the JDK utility located at Java Home—to lay down the WebLogic binaries onto the target host server using silent mode and the specified response file.

  If the Java Home parameter is not specified, the workflow uses the OS-specific package installer to lay down the WebLogic binaries onto the target host server using silent mode and the specified response file.

- Starts the WebLogic Node Manager process on the target host servers.

Validation Checks Performed

Much of the validation centers on the input parameters:

- The Binary Archive file or path is valid.

- The Java Home directory is valid.

- The Node Manager Service and Setup Custom SSL Stores parameters are either true or false.

- The Node Manager Port is either null or a valid integer.

- The Binary Archive and Java Home parameters are valid install files.

- If the Setup Custom SSL Stores parameter is true, the KeyStore, TrustStore, and Private Key Alias exist.

Steps Executed

The Provision WebLogic Software workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure and all subsequent steps are skipped.
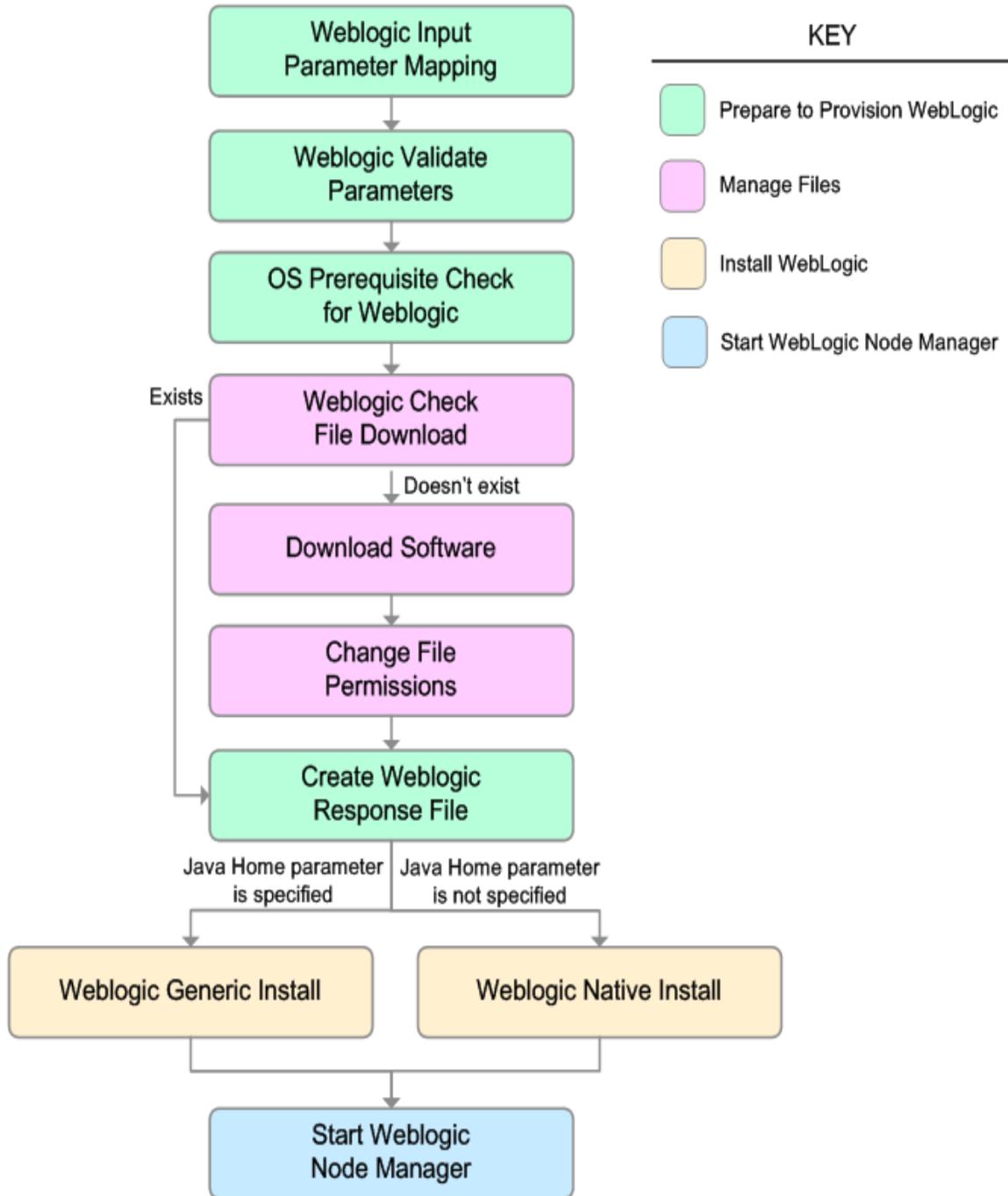
Steps Used in Provision WebLogic Software

Workflow Step	Description
Weblogic Input Parameter Mapping	This step performs the following actions to facilitate the execution of subsequent steps in the workflow: 1. Sets the Call Wrapper parameter to its default value. The Call Wrapper is the command that executes a step as a specific user. 2. Allows certain parameters— that may or may not be required depending on what type of action you want to perform—to be hidden or exposed.
Weblogic Validate Parameters	This step prepares and validates the input parameters required to install WebLogic.
OS Prerequisite Check for Weblogic	This step first determines whether the operating system kernel on the target server is a supported version, and then it determines if adequate temporary space is available to extract the contents of the installation binaries and install WebLogic.
Weblogic Check File Download	This step checks for the existence of a file on the target machine before downloading that file from the software repository. For each file in the specified File List, it: 1. Determines whether the file is in the expected location on the target machine. 2. If the file is not in the expected location, adds that file to a list of files that need to be downloaded.
Download Software	This step downloads a list of files to a specified location on the target server.
Change File Permissions	This step changes the permissions settings for one or more specified files or directories.
Create Weblogic Reponse File	This step creates the response file required to drive the installation of WebLogic and determines whether the generic or native installer will be used.
Weblogic Native Install	This step starts the installation of WebLogic using the native installer—OS-package specific—with silent mode and the specified response file.
Weblogic Generic Install	This step starts the installation of WebLogic using the generic installer—JDK utility—with silent mode and the specified response file.

Steps Used in Provision WebLogic Software (continued)

Workflow Step	Description
Start Weblogic Node Manager	This step starts the WebLogic Node Manager process on the target server.

For parameter descriptions and defaults, see

How to Run this Workflow

The following instructions show you how to customize and run the Provision WebLogic Software workflow in your environment.

The workflow provides default values for some parameters. These default values are usually sufficient for a "typical" installation. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in Parameters for Provision WebLogic Software on page 49.

> **Note:** Before following this procedure, review the Prerequisites for this Workflow on page 36, and ensure that all requirements are satisfied.

To use the Provision WebLogic Software workflow:

1. Create a deployable copy of the workflow (see Create a Deployable Workflow on page 21).

2. Determine the values that you will specify for the following parameters:

Input Parameters for Weblogic Validate Parameters

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that will contain this installation. For example: `/opt/oracle/weblogic`
Binary Archive	no default	required	Fully qualified path to the WebLogic Package Installer.

Input Parameters for Weblogic Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Component Paths	see description	required	The components and/or subcomponents that you want to install on your system. To install multiple components, separate the components with a bar | character. Default is: WebLogic Server/Core Application Server | WebLogic Server/Administration Console | WebLogic Server/Configuration Wizard and Upgrade Framework | WebLogic Server/Web 2.0 HTTP Pub-Sub Server | WebLogic Server/WebLogic JDBC Drivers | WebLogic Server/Third Party JDBC Drivers | WebLogic Server/WebLogic Server Clients | WebLogic Server/WebLogic Web Server Plugins | WebLogic Server/UDDI and Xquery Support | WebLogic Server/Server Examples **Note:** If you specify WebLogic Server, you will install all of the above.
Java Home	no default	required if generic installer is used	Fully qualified path to the JAVA_HOME—JDK utility—that will be used for the generic install. For example: `/opt/oracle/jdk1.6.0_35`
Log File	no default	required	The fully qualified path where a verbose log file will be generated during installation. For example: `/var/tmp/weblogic_log.txt`
Node Manager Port	no default	optional	Sets the port number under which the Node Manager will run.
Node Manager Service	no default	required	Provides the option to set the Node Manager to run as a Windows Service. Valid values are true or false.

Input Parameters for Weblogic Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Setup Custom SSL Stores	no default	required	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.
Staging Directory	no default	required	Fully qualified path to a temporary directory that the installer will use to uncompress the binary into.
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

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 117).

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives. See How to Expose Additional Workflow Parameters on page 116

See Parameters for Provision WebLogic Software on page 49 for detailed descriptions of all input parameters for this workflow, including default values.

3. In the workflow editor, expose any additional parameters that you need. You will specify values for those parameters when you create the deployment.

4. Save the changes to the workflow (click **Save** in the lower right corner).

5. Create a new deployment (see Create a Deployment on page 22 for instructions).

6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed.You do not need to specify values for those parameters whose default values are appropriate for your environment.

7. On the Targets tab, specify one or more targets for this deployment.

Note: The target for this deployment should be set to all the servers that are involved in your WebLogic installation.

8. Save the deployment (click **Save** in the lower right corner).

9. Run the workflow using this deployment (see Run Your Workflow on page 26 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 the workflow execution, the error will be logged, and the workflow terminates in the FAILURE state.

Optional: If you want to further verify the results:

View the `{BEAHOME}/logs/log.txt` file. This file is created after the installation and contains specific information about what was installed.

Sample Scenario

This topic shows you typical parameter values for different use cases for the Provision WebLogic Software workflow.

Scenario 1: Use the native installer and log in via SSL

If you want to use the native—OS-specific—package installer to lay down the WebLogic binaries onto the target host server, do not set the Java Home parameter.

If you want a more secure WebLogic 11g and 12c environment, log in via SSL. Set Setup Custom SSL Stores to false. Do not provide values for the following parameters: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, and Private Key Alias.

Input Parameters for Weblogic Validate Parameters

Parameter Name	Example Value	Description
BEA Home	see description	Fully qualified path to the middleware home directory that will contain this installation. For example: `/opt/oracle/weblogic`
Binary Archive	`wls_1035_linux.bin`	Fully qualified path to the WebLogic Package Installer.
Component Paths	WebLogic Server (this installs everything under it)	The components and/or subcomponents that you want to install on your system. To install multiple components, separate the components with a bar | character. Default is: WebLogic Server/Core Application Server | WebLogic Server/Administration Console | WebLogic Server/Configuration Wizard and Upgrade Framework | WebLogic Server/Web 2.0 HTTP Pub-Sub Server | WebLogic Server/WebLogic JDBC Drivers | WebLogic Server/Third Party JDBC Drivers | WebLogic Server/WebLogic Server Clients | WebLogic Server/WebLogic Web Server Plugins | WebLogic Server/UDDI and Xquery Support | WebLogic Server/Server Examples **Note:** If you specify WebLogic Server, you will install all of the above.
Java Home		Fully qualified path to the JAVA_HOME—JDK utility—that will be used for the generic install. For example: `/opt/oracle/jdk1.6.0_35`

Input Parameters for Weblogic Validate Parameters (continued)

Parameter Name	Example Value	Description
Log File	`/tmp/ weblogic_ log.txt`	The fully qualified path where a verbose log file will be generated during installation. For example: `/var/tmp/weblogic_log.txt`
Node Manager Port	5556	Sets the port number under which the Node Manager will run.
Node Manager Service	false	Provides the option to set the Node Manager to run as a Windows Service. Valid values are true or false.
Setup Custom SSL Stores	false	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.
Staging Directory	`/tmp/`	Fully qualified path to a temporary directory that the installer will use to uncompress the binary into.
WLS Install Home	see description	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Be sure that the default values for all remaining input parameters are appropriate for your environment (see Parameters for Provision WebLogic Software on page 49).

Scenario 2: Use the generic installer and log in using a custom keystore and truststore

If you want to use the generic package installer to lay down the WebLogic binaries onto the target host server, set the Java Home parameter to the JDK utility location.

Use this case to give more control over how you log in. Set Setup Custom SSL Stores to true. Also provide values for the following parameters: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, and Private Key Alias.

Input Parameters for Weblogic Validate Parameters

Parameter Name	Example Value	Description
BEA Home	see description	Fully qualified path to the middleware home directory that will contain this installation. For example: `/opt/oracle/weblogic`
Binary Archive	`wls_1035_ linux.bin`	Fully qualified path to the WebLogic Package Installer.
Component Paths	WebLogic Server (this installs everything under it)	The components and/or subcomponents that you want to install on your system. To install multiple components, separate the components with a bar | character. Default is: WebLogic Server/Core Application Server | WebLogic Server/Administration Console | WebLogic Server/Configuration Wizard and Upgrade Framework | WebLogic Server/Web 2.0 HTTP Pub-Sub Server | WebLogic Server/WebLogic JDBC Drivers | WebLogic Server/Third Party JDBC Drivers | WebLogic Server/WebLogic Server Clients | WebLogic Server/WebLogic Web Server Plugins | WebLogic Server/UDDI and Xquery Support | WebLogic Server/Server Examples **Note:** If you specify WebLogic Server, you will install all of the above.
Custom KeyStore PassPhrase	password	Password for the custom keystore.
Custom KeyStore Path	`/opt/WebLogic/ keystore`	Fully qualified path to the custom keystore file.
Custom TrustStore Path	`/opt/WebLogic/ truststore`	Fully qualified path to the custom truststore file.

Input Parameters for Weblogic Validate Parameters (continued)

Parameter Name	Example Value	Description
Java Home	see description	Fully qualified path to the JAVA_HOME—JDK utility—that will be used for the generic install. For example: `/opt/oracle/jdk1.6.0_35`
Log File	`/tmp/ weblogic_ log.txt`	The fully qualified path where a verbose log file will be generated during installation. For example: `/var/tmp/weblogic_log.txt`
Node Manager Port	5556	Sets the port number under which the Node Manager will run.
Node Manager Service	false	Provides the option to set the Node Manager to run as a Windows Service. Valid values are true or false.
Private Key Alias	Hostname	The keystore attribute that defines the string alias used to store and retrieve the server's private key.
Setup Custom SSL Stores	true	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.
Staging Directory	`/tmp/`	Fully qualified path to a temporary directory that the installer will use to uncompress the binary into.
WLS Install Home	see description	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Note: Some of these parameters are not exposed by default in the deployment. See How to Expose Additional Workflow Parameters on page 116.

You need to expose the following parameters: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, and Private Key Alias.

Be sure that the default values for all remaining input parameters are appropriate for your environment (see Parameters for Provision WebLogic Software on the next page).

Parameters for Provision WebLogic Software

The following tables describe the required and optional input parameters for this workflow. Some of these parameters may not be initially visible in a deployment (see How to Expose Additional Workflow Parameters on page 116). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Following are tables for each of the steps used by this workflow where parameters are defined:

Parameters Defined in this Step: Weblogic Validate Parameters

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that will contain this installation. For example: `/opt/oracle/weblogic`
Binary Archive	no default	required	Fully qualified path to the WebLogic Package Installer.
Call Wrapper	see description	optional	Command that will execute this step (or subsequent steps) as a specific user. For UNIX targets, the default is: `/opt/hp/dma/client/jython.sh` running as root For Windows targets, the default is: `jython` running as Administrator **Caution:** This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.

Parameters Defined in this Step: Weblogic Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Component Paths	see description	required	The components and/or subcomponents that you want to install on your system. To install multiple components, separate the components with a bar | character. Default is: WebLogic Server/Core Application Server | WebLogic Server/Administration Console | WebLogic Server/Configuration Wizard and Upgrade Framework | WebLogic Server/Web 2.0 HTTP Pub-Sub Server | WebLogic Server/WebLogic JDBC Drivers | WebLogic Server/Third Party JDBC Drivers | WebLogic Server/WebLogic Server Clients | WebLogic Server/WebLogic Web Server Plugins | WebLogic Server/UDDI and Xquery Support | WebLogic Server/Server Examples **Note:** If you specify WebLogic Server, you will install all of the above.
Custom KeyStore PassPhrase	no default	optional	Password for the custom keystore.
Custom KeyStore Path	no default	optional	Fully qualified path to the custom keystore file.
Custom TrustStore Path	no default	optional	Fully qualified path to the custom truststore file.
Java Home	no default	required if generic installer is used	Fully qualified path to the JAVA_HOME—JDK utility— that will be used for the generic install. For example: `/opt/oracle/jdk1.6.0_35`
Log File	no default	required	The fully qualified path where a verbose log file will be generated during installation. For example: `/var/tmp/weblogic_log.txt`
Node Manager Port	no default	optional	Sets the port number under which the Node Manager will run.

Parameters Defined in this Step: Weblogic Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Node Manager Service	no default	required	Provides the option to set the Node Manager to run as a Windows Service. Valid values are true or false.
Private Key Alias	no default	optional	The keystore attribute that defines the string alias used to store and retrieve the server's private key.
Setup Custom SSL Stores	no default	required	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.
Staging Directory	no default	required	Fully qualified path to a temporary directory that the installer will use to uncompress the binary into.
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Provision WebLogic Domain and Admin Server

This workflow creates a WebLogic domain and Administration Server from an existing installation of WebLogic.

After you have the WebLogic 11g or 12c binaries installed, this workflow sets up the process server and creates the domain where the components can be placed.

The following reference architecture diagram gives an example of what this workflow does:
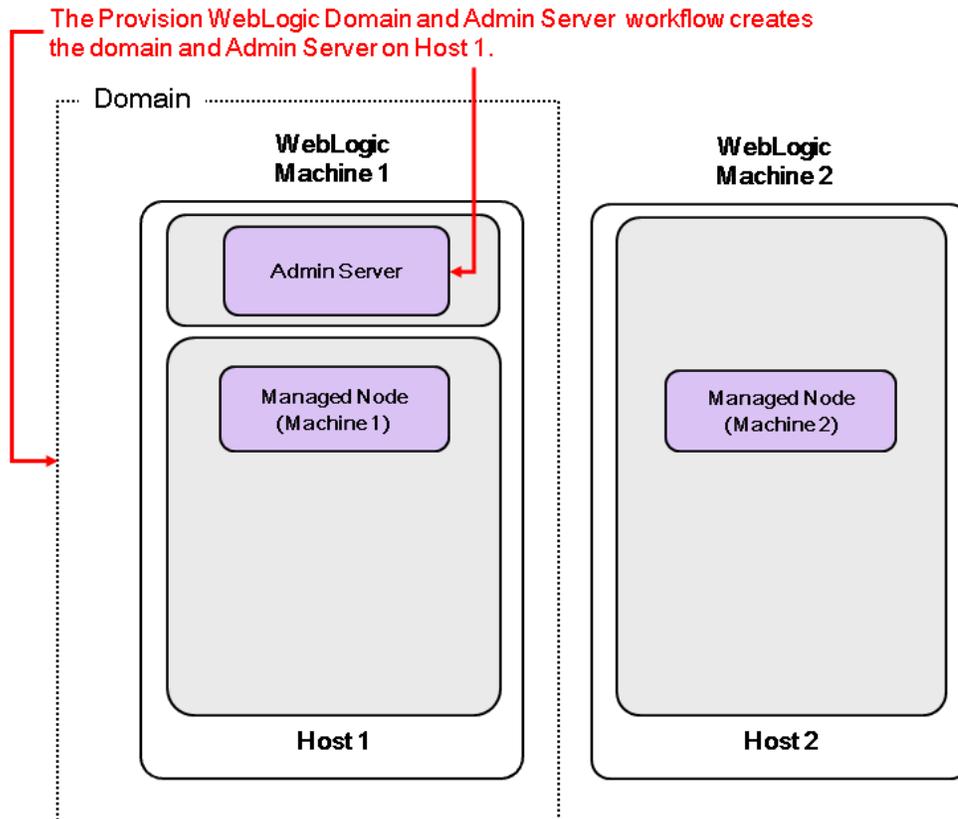
Be sure to run the WebLogic provisioning workflows in the following order to create an operational environment:

1. Run the Provision WebLogic Software workflow to provision the WebLogic 11g or 12c software on all the target host servers.

2. Then run this workflow to provision the domain and the Administration Server on the designated target host server.

3. Then run the Provision WebLogic Managed Servers workflow to create configurations for the Managed Servers on the designated target host server.

For additional information about how this workflow can be used with other provisioning workflows see How to Use the Workflows Together on page 32.

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 the Provision WebLogic Domain and Admin Server workflow:

1. This solution requires HP DMA version 10.10 (or later).

2. You have installed the Application Server Provisioning Solution Pack.

For more information about prerequisites for WebLogic 11g and 12c, refer to the WebLogic Product Documentation on page 110.

How this Workflow Works

The following information describes how the Provision WebLogic Domain and Admin Server workflow works:

Overview

The workflow does the following:

- Prepares to provision the WebLogic domain and Administration Server by setting up the command to be used in subsequent steps and validating input parameters.

- Creates the domain and Administration Server using the WebLogic Scripting Tool (WLST). To do this the workflow opens a domain template, configures the Administration Server and SSL port, writes the domain, then closes the domain template.

- Starts the WebLogic Administration Manager process on the target host server.

Validation Checks Performed

Much of the validation centers on the input parameters:

- Checks that the BEA Home and WLS Install Home files exist.

- Verifies that Admin Server Port and Admin SSL Port are null or valid integers.

- Verifies that Enable SSL is either true or false.

- Checks that Custom KeyStore Path and Custom TrustStore Path are null or the paths exist.

- Verifies that if Enable SSL is true that Admin SSL Port has a value and if Enable SSL is false that Admin SSL Port does not have a value.

Steps Executed

The Provision WebLogic Domain and Admin Server workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure and all subsequent steps are skipped.
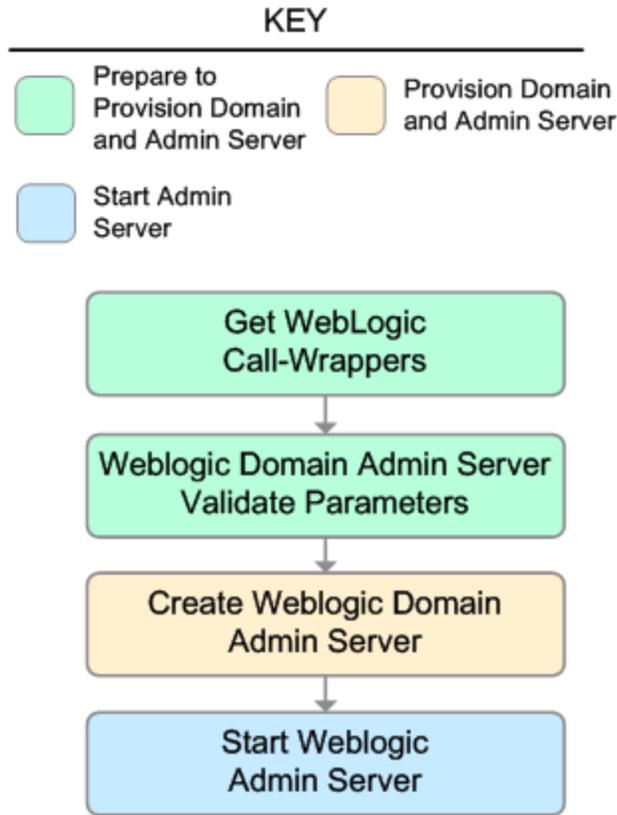
Steps Used in Provision WebLogic Domain and Admin Server

Workflow Step	Description
Get WebLogic Call-Wrappers	This step creates the commands that subsequent steps will use to execute scripts and WebLogic Scripting Tool (WLST) operations.
Weblogic Domain Admin Server Validate Parameters	This step prepares and validates the parameters needed to create a WebLogic domain and Administration Server.
Create Weblogic Domain Admin Server	This step creates a WebLogic domain and Administration Server.
Start Weblogic Admin Server	This step starts the WebLogic Administration Server.

For parameter descriptions and defaults, see Parameters for Provision WebLogic Domain and Admin Server on page 64.

HP Database and Middleware Automation (10.10)

How to Run this Workflow

The following instructions show you how to customize and run the Provision WebLogic Domain and Admin Server workflow in your environment.

The workflow provides default values for some parameters. These default values are usually sufficient for a "typical" installation. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in Parameters for Provision WebLogic Domain and Admin Server on page 64.

> **Note:** Before following this procedure, review the Prerequisites for this Workflow on page 54, and ensure that all requirements are satisfied.

To use the Provision WebLogic Domain and Admin Server workflow:

1. Create a deployable copy of the workflow (see Create a Deployable Workflow on page 21).

2. Determine the values that you will specify for the following parameters:

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Weblogic Domain Admin Server Validate Parameters

Parameter Name	Default Value	Required	Description
Admin SSL Port	no default	optional	The Secure Sockets Layer (SSL) port on which the WebLogic Administration Server will run. If Enable SSL is set to true, this parameter must also have a value.
Admin Server Port	no default	optional	The non-SSL port on which the WebLogic Administration Server will run.
Domain Path	no default	required	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`

Input Parameters for Weblogic Domain Admin Server Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Enable SSL	false	required	Tells the WebLogic Administration Server to either use (true) or not use (false) the SSL port for communication.
Setup Custom SSL Stores	no default	required	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.
Weblogic Admin Password	no default	required	The password that will be used to authenticate with the WebLogic Administration Server.

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 117).

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives. See How to Expose Additional Workflow Parameters on page 116

See Parameters for Provision WebLogic Domain and Admin Server on page 64 for detailed descriptions of all input parameters for this workflow, including default values.

3. In the workflow editor, expose any additional parameters that you need. You will specify values for those parameters when you create the deployment.

4. Save the changes to the workflow (click **Save** in the lower right corner).

5. Create a new deployment (see Create a Deployment on page 22 for instructions).

6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed.You do not need to specify values for those parameters whose default values are appropriate for your environment.

7. On the Targets tab, specify one or more targets for this deployment.

Note: The target for this deployment should be set to the server where the WebLogic Administration Server will be provisioned.

8. Save the deployment (click **Save** in the lower right corner).

9. Run the workflow using this deployment (see Run Your Workflow on page 26 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 the workflow execution, the error will be logged, and the workflow terminates in the FAILURE state.

Optional: If you want to further verify the results:

1. View the `{DomainPath}/servers/AdminServer/logs/AdminServer.log` file.

    This file is created when the Admin Server is started up.

2. Look for the following to see if the Admin Server started up cleanly:

    Server started in RUNNING mode.

Sample Scenario

This topic shows you typical parameter values for different use cases for the Provision WebLogic Domain and Admin Server workflow.

Scenario 1: Log in via SSL and enables the SSL port for communication

If you want a more secure WebLogic 11g and 12c environment, log in via SSL. Set Setup Custom SSL Stores to false. Do not provide values for the following parameters: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

If you want to enable the SSL port for communication, set Enable SSL to true and set Admin SSL Port to the port number.

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Example Value	Description
BEA Home	see description	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	see description	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Weblogic Domain Admin Server Validate Parameters

Parameter Name	Example Value	Description
Admin SSL Port	8002	The Secure Sockets Layer (SSL) port on which the WebLogic Administration Server will run. If Enable SSL is set to true, this parameter must also have a value.
Admin Server Port	8001	The non-SSL port on which the WebLogic Administration Server will run.
Domain Path	see description	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Enable SSL	true	Tells the WebLogic Administration Server to either use (true) or not use (false) the SSL port for communication.

Input Parameters for Weblogic Domain Admin Server Validate Parameters (continued)

Parameter Name	Example Value	Description
Setup Custom SSL Stores	false	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.
Weblogic Admin Password	password	The password that will be used to authenticate with the WebLogic Administration Server.

Be sure that the default values for all remaining input parameters are appropriate for your environment (see).

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Scenario 2: Log in using a custom keystore and truststore and do not enable SSL communication

Use this case to give more control over how you log in. Set Setup Custom SSL Stores to true. Also provide values for the following parameters: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

If you do not want to enable the SSL port for communication, set Enable SSL to false.

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Example Value	Description
BEA Home	see description	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	see description	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Weblogic Domain Admin Server Validate Parameters

Parameter Name	Example Value	Description
Admin SSL Port		The Secure Sockets Layer (SSL) port on which the WebLogic Administration Server will run. If Enable SSL is set to true, this parameter must also have a value.
Admin Server Port	8001	The non-SSL port on which the WebLogic Administration Server will run.
Custom KeyStore PassPhrase	password	Password for the custom keystore.
Custom KeyStore Path	`/opt/WebLogic/keystore`	Fully qualified path to the custom keystore file.
Custom TrustStore PassPhrase	password	Password for the custom truststore.
Custom TrustStore Path	`/opt/WebLogic/truststore`	Fully qualified path to the custom truststore file.

Input Parameters for Weblogic Domain Admin Server Validate Parameters (continued)

Parameter Name	Example Value	Description
Domain Path	see description	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Enable SSL	false	Tells the WebLogic Administration Server to either use (true) or not use (false) the SSL port for communication.
Private Key Alias	Hostname	The keystore attribute that defines the string alias used to store and retrieve the server's private key.
Setup Custom SSL Stores	true	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.
Weblogic Admin Password	password	The password that will be used to authenticate with the WebLogic Administration Server.

Note: Some of these parameters are not exposed by default in the deployment. See How to Expose Additional Workflow Parameters on page 116.

You need to expose the following parameters: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

Be sure that the default values for all remaining input parameters are appropriate for your environment (see Parameters for Provision WebLogic Domain and Admin Server on the next page).

Parameters for Provision WebLogic Domain and Admin Server

The following tables describe the required and optional input parameters for this workflow. Some of these parameters may not be initially visible in a deployment (see How to Expose Additional Workflow Parameters on page 116). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Following are tables for each of the steps used by this workflow where parameters are defined:

Parameters Defined in this Step: Get WebLogic Call-Wrappers

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Additional Parameters Defined in this Step: Weblogic Domain Admin Server Validate Parameters

Parameter Name	Default Value	Required	Description
Admin SSL Port	no default	optional	The Secure Sockets Layer (SSL) port on which the WebLogic Administration Server will run. If Enable SSL is set to true, this parameter must also have a value.
Admin Server Hostname	no default	required	The WebLogic Administration Server host name. The Administration Server is used to issue administrative commands to the Application Servers.
Admin Server Port	no default	optional	The non-SSL port on which the WebLogic Administration Server will run.
Call Wrapper	see description	optional	Command that will execute this step (or subsequent steps) as a specific user. For UNIX targets, the default is: `/opt/hp/dma/client/jython.sh` running as root For Windows targets, the default is: `jython` running as Administrator **Caution:** This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.

Additional Parameters Defined in this Step: Weblogic Domain Admin Server Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Custom KeyStore PassPhrase	no default	optional	Password for the custom keystore.
Custom KeyStore Path	no default	optional	Fully qualified path to the custom keystore file.
Custom TrustStore PassPhrase	no default	optional	Password for the custom truststore.
Custom TrustStore Path	no default	optional	Fully qualified path to the custom truststore file.
Domain Path	no default	required	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Enable SSL	false	required	Tells the WebLogic Administration Server to either use (true) or not use (false) the SSL port for communication.
Private Key Alias	no default	optional	The keystore attribute that defines the string alias used to store and retrieve the server's private key.
Setup Custom SSL Stores	no default	required	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

Additional Parameters Defined in this Step: Weblogic Domain Admin Server Validate Parameters (continued)

Parameter Name	Default Value	Required	Description

WLST Call Wrapper	no default	required	Command that will invoke the WebLogic Scripting Tool (WLST). For example:
			
			`su `<user>` /opt/oracle/WebLogic/install/`
			`common/bin/wlst.sh`
			
			The fully qualified path will vary depending on where you installed the product. The <user> must have appropriate permissions.
			
			Caution: This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.

Weblogic Admin Password	no default	required	The password that will be used to authenticate with the WebLogic Administration Server.

Provision WebLogic Managed Servers

This workflow creates a configuration for a WebLogic Managed Server (or servers) from an existing installation and domain of WebLogic.

You can group application servers together to optimize availability and scalability, or to manage your workload.

The following reference architecture diagram gives an example of what this workflow does:
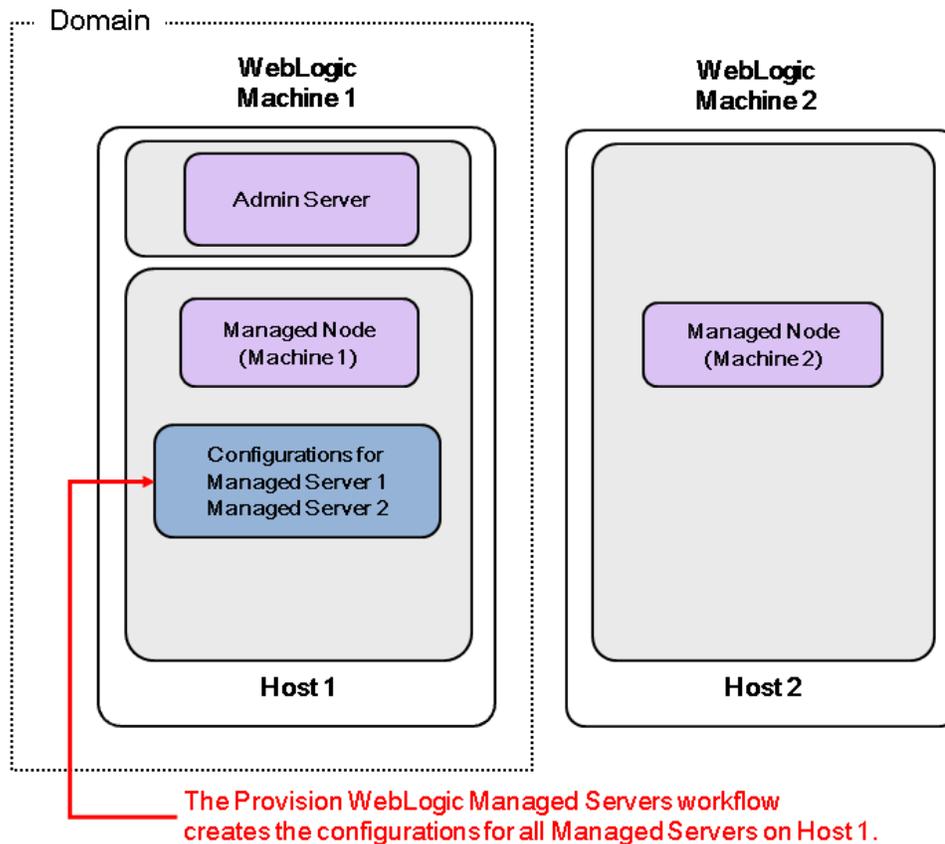
Run the WebLogic provisioning workflows in the following order to create an operational environment:

1. Run the Provision WebLogic Software workflow to provision the WebLogic 11g or 12c software on all of the target host servers.

2. Then run the Provision WebLogic Domain and Admin Server workflow to provision the domain and the Administration Server on the designated target host server.

3. Then run this workflow to create the configurations for all the Managed Servers on the designated target host server.

After you run these three workflows you will have a running WebLogic environment.

Optionally, run the remaining workflows:

- Run the Provision WebLogic Cluster workflow to create a cluster configuration for the newly created Managed Servers.

- Then run the Increase WebLogic Domain Span workflow if you want your domain to span more than one machine.

For additional information about how this workflow can be used with other provisioning workflows see How to Use the Workflows Together on page 32.

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 the Provision WebLogic Managed Servers workflow:

1. This solution requires HP DMA version 10.10 (or later).

2. You have installed the Application Server Provisioning Solution Pack.

For more information about prerequisites for WebLogic 11g and 12c, refer to the WebLogic Product Documentation on page 110.

How this Workflow Works

The following information describes how the Provision WebLogic Managed Servers workflow works:

Overview

The workflow does the following:

- Prepares to provision the WebLogic Managed Servers by setting up the command to be used in subsequent steps and validating input parameters.

- Creates the configurations for the Managed Servers using the WebLogic Scripting Tool (WLST). To do this, the workflow accesses the domain information, creates the servers, then updates the domain.

- Stops and restarts the WebLogic Administration Server.

Validation Checks Performed

Much of the validation centers on the input parameters:

- Checks that the BEA Home and WLS Install Home files exist.

- Verifies that Managed Server Ports and Managed Server SSL Ports are null or valid integers.

- Verifies that the lists are the same length for Managed Server Hostnames, Managed Server Names, and Managed Server Ports.

Steps Executed

The Provision WebLogic Managed Servers workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure and all subsequent steps are skipped.

KEY

	Prepare to Provision Managed Servers		Provision Managed Servers
	Stop and Restart Admin Server		

Get WebLogic Call-Wrappers

↓

Weblogic Managed Server Validate Parameters

↓

Provision Weblogic Managed Servers

↓

Stop Weblogic Admin Server

↓

Start Weblogic Admin Server
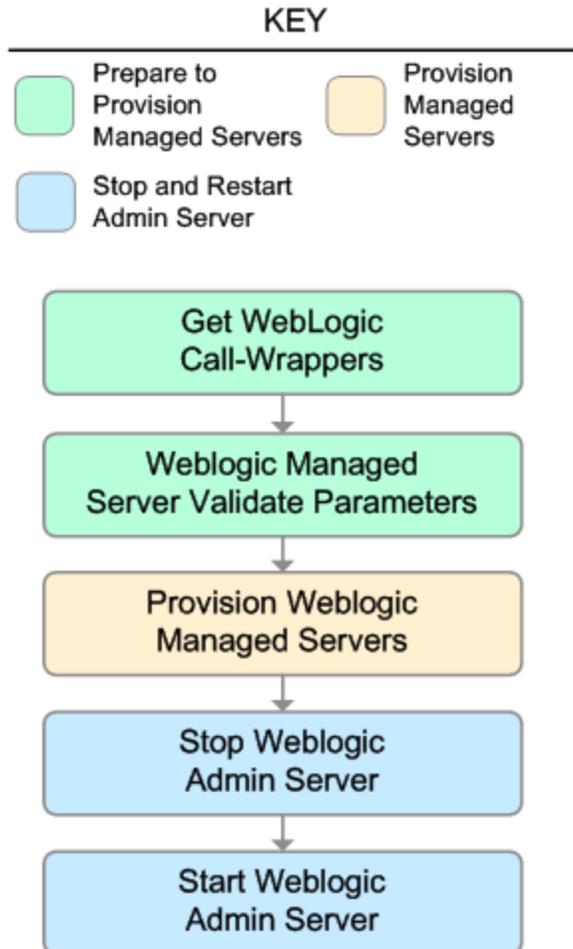
Steps Used in Provision WebLogic Managed Servers

Workflow Step	Description
Get WebLogic Call-Wrappers	This step creates the commands that subsequent steps will use to execute scripts and WebLogic Scripting Tool (WLST) operations.
WebLogic Managed Server Validate Parameters	This step prepares the parameters needed to create a Managed Server in WebLogic.
Provision Weblogic Managed Servers	This step creates Managed Servers from an existing domain in WebLogic.
Stop Weblogic Admin Server	This step stops the WebLogic Administration Server.
Start Weblogic Admin Server	This step starts the WebLogic Administration Server.

For parameter descriptions and defaults, see Parameters for Provision WebLogic Managed Servers on page 82.

How to Run this Workflow

The following instructions show you how to customize and run the Provision WebLogic Managed Servers workflow in your environment.

The workflow provides default values for some parameters. These default values are usually sufficient for a "typical" installation. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in Parameters for Provision WebLogic Managed Servers on page 82.

> **Note:** Before following this procedure, review the Prerequisites for this Workflow on page 69, and ensure that all requirements are satisfied.

To use the Provision WebLogic Managed Servers workflow:

1. Create a deployable copy of the workflow (see Create a Deployable Workflow on page 21).

2. Determine the values that you will specify for the following parameters:

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Weblogic Managed Server Validate Parameters

Parameter Name	Default Value	Required	Description
Domain Path	no default	required	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Enable Managed Server SSL	no default	required	This parameter determines whether the Managed Server will use or not use the Secure Sockets Layer (SSL) port for communication. Valid values are true or false.

Input Parameters for Weblogic Managed Server Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Managed Server Hostnames	no default	required	Comma-delimited list of host names or IP addresses where each Managed Server will be provisioned. **Note:** The order of the host names or IP addresses specified must match the order specified in the following parameters: Managed Server Names, Managed Server Ports, and Managed Server SSL Ports.
Managed Server Names	no default	required	Comma-delimited list of the names of the Managed Servers to be provisioned. For example: Appserver1, Appserver2, Appserver3. **Note:** The order of the server names specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Ports, and Managed Server SSL Ports.
Managed Server Ports	no default	required	Comma-delimited list of the ports on which the Managed Servers will listen. **Note:** The order of the ports specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Names, and Managed Server SSL Ports.
Managed Server SSL Ports	no default	optional	Comma-delimited list of SSL ports on which the Managed Servers will listen. **Note:** The order of the SSL ports specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Names, and Managed Server Ports.

Input Parameters for Weblogic Managed Server Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Setup Server Custom SSL Stores	no default	required	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Server Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

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 117).

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives. See How to Expose Additional Workflow Parameters on page 116

See Parameters for Provision WebLogic Managed Servers on page 82 for detailed descriptions of all input parameters for this workflow, including default values.

3. In the workflow editor, expose any additional parameters that you need. You will specify values for those parameters when you create the deployment.

4. Save the changes to the workflow (click **Save** in the lower right corner).

5. Create a new deployment (see Create a Deployment on page 22 for instructions).

6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed.You do not need to specify values for those parameters whose default values are appropriate for your environment.

7. On the Targets tab, specify one or more targets for this deployment.

Note: The target for this deployment should be set to the server where the WebLogic Administration Server is provisioned.

8. Save the deployment (click **Save** in the lower right corner).

9. Run the workflow using this deployment (see Run Your Workflow on page 26 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 the workflow execution, the error will be logged, and the workflow terminates in the FAILURE state.

Optional: If you want to further verify the results:

1. View the `{DomainPath}/servers/{ManageServerName}/logs/`
    `{ManagedServerName}.log` file.

    This file is created when the Managed Server is started up.

2. Look for the following to verify that the Administration Server started:

    Server started in RUNNING mode.

Sample Scenario

This topic shows you typical parameter values for different use cases for the Provision WebLogic Managed Servers workflow.

Scenario 1: Log in via SSL and create three Managed Servers on three separate hosts

If you want a more secure WebLogic 11g and 12c environment, log in via SSL. Set Setup Custom SSL Stores to false. Do not provide values for the following parameters: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

This scenario creates the following configuration of Managed Servers:

Managed Server configuration

Managed Server Name	Managed Server Hostname	Managed Server Port
Appserver1	Host1	8001
Appserver2	Host2	8002
Appserver3	Host3	8003

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Example Value	Description
BEA Home	see description	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	see description	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Weblogic Managed Server Validate Parameters

Parameter Name	Example Value	Description
Domain Path	see description	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Enable Managed Server SSL	false	This parameter determines whether the Managed Server will use or not use the Secure Sockets Layer (SSL) port for communication. Valid values are true or false.

Input Parameters for Weblogic Managed Server Validate Parameters (continued)

Parameter Name	Example Value	Description
Managed Server Hostnames	Host1, Host2, Host3	Comma-delimited list of host names or IP addresses where each Managed Server will be provisioned. **Note:** The order of the host names or IP addresses specified must match the order specified in the following parameters: Managed Server Names, Managed Server Ports, and Managed Server SSL Ports.
Managed Server Names	AppServer1, AppServer2, AppServer3	Comma-delimited list of the names of the Managed Servers to be provisioned. For example: Appserver1, Appserver2, Appserver3. **Note:** The order of the server names specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Ports, and Managed Server SSL Ports.
Managed Server Ports	8001, 8002, 8003	Comma-delimited list of the ports on which the Managed Servers will listen. **Note:** The order of the ports specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Names, and Managed Server SSL Ports.
Managed Server SSL Ports		Comma-delimited list of SSL ports on which the Managed Servers will listen. **Note:** The order of the SSL ports specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Names, and Managed Server Ports.
Setup Server Custom SSL Stores	false	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Server Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

Be sure that the default values for all remaining input parameters are appropriate for your environment (see Parameters for Provision WebLogic Managed Servers on page 82).

Scenario 2: Log in using a custom keystore and truststore and create four Managed Servers on two hosts

Use this case to give more control over how you log in. Set Setup Custom SSL Stores to true. Also provide values for the following parameters: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

This scenario creates the following configuration of Managed Servers:

Managed Server configuration

Managed Server Name	Managed Server Hostname	Managed Server Port	Managed Server SSL Port
Appserver1	Host1	8001	8881
Appserver2	Host1	8002	8882
Appserver3	Host2	8001	8881
Appserver4	Host2	8002	8882

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Example Value	Description
BEA Home	see description	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	see description	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Weblogic Managed Server Validate Parameters

Parameter Name	Example Value	Description
Custom KeyStore PassPhrase	password	Password for the custom keystore.
Custom KeyStore Path	`/opt/WebLogic/keystore`	Fully qualified path to the custom keystore file.
Custom TrustStore PassPhrase	password	Password for the custom truststore.

Input Parameters for Weblogic Managed Server Validate Parameters (continued)

Parameter Name	Example Value	Description
Custom TrustStore Path	`/opt/WebLogic/ truststore`	Fully qualified path to the custom truststore file.
Domain Path	see description	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Enable Managed Server SSL	true	This parameter determines whether the Managed Server will use or not use the Secure Sockets Layer (SSL) port for communication. Valid values are true or false.
Managed Server Hostnames	Host1, Host2, Host1, Host2	Comma-delimited list of host names or IP addresses where each Managed Server will be provisioned. **Note:** The order of the host names or IP addresses specified must match the order specified in the following parameters: Managed Server Names, Managed Server Ports, and Managed Server SSL Ports.
Managed Server Names	Appserver1, Appserver2, Appserver3, Appserver4	Comma-delimited list of the names of the Managed Servers to be provisioned. For example: Appserver1, Appserver2, Appserver3, Appserver4 **Note:** The order of the server names specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Ports, and Managed Server SSL Ports.
Managed Server Ports	8001, 8002, 8001, 8002	Comma-delimited list of the ports on which the Managed Servers will listen. **Note:** The order of the ports specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Names, and Managed Server SSL Ports.

Input Parameters for Weblogic Managed Server Validate Parameters (continued)

Parameter Name	Example Value	Description
Managed Server SSL Ports	8881,8882,8881, 8882	Comma-delimited list of SSL ports on which the Managed Servers will listen. **Note:** The order of the SSL ports specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Names, and Managed Server Ports.
Private Key Alias	Hostname	The keystore attribute that defines the string alias used to store and retrieve the server's private key.
Setup Server Custom SSL Stores	true	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Server Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

Note: Some of these parameters are not exposed by default in the deployment. See How to Expose Additional Workflow Parameters on page 116.

You need to expose the following parameters: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.

Be sure that the default values for all remaining input parameters are appropriate for your environment (see Parameters for Provision WebLogic Managed Servers on the next page).

Parameters for Provision WebLogic Managed Servers

The following tables describe the required and optional input parameters for this workflow. Some of these parameters may not be initially visible in a deployment (see How to Expose Additional Workflow Parameters on page 116). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Following are tables for each of the steps used by this workflow where parameters are defined:

Parameters Defined in this Step: Get WebLogic Call-Wrappers

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Additional Parameters Defined in this Step: Weblogic Managed Server Validate Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	see description	optional	Command that will execute this step (or subsequent steps) as a specific user. For UNIX targets, the default is: `/opt/hp/dma/client/jython.sh` running as root For Windows targets, the default is: `jython` running as Administrator **Caution:** This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.
Custom KeyStore PassPhrase	no default	optional	Password for the custom keystore.
Custom KeyStore Path	no default	optional	Fully qualified path to the custom keystore file.

Additional Parameters Defined in this Step: Weblogic Managed Server Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Custom TrustStore PassPhrase	no default	optional	Password for the custom truststore.
Custom TrustStore Path	no default	optional	Fully qualified path to the custom truststore file.
Domain Path	no default	required	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Enable Managed Server SSL	no default	required	This parameter determines whether the Managed Server will use or not use the Secure Sockets Layer (SSL) port for communication. Valid values are true or false.
Managed Server Hostnames	no default	required	Comma-delimited list of host names or IP addresses where each Managed Server will be provisioned. **Note:** The order of the host names or IP addresses specified must match the order specified in the following parameters: Managed Server Names, Managed Server Ports, and Managed Server SSL Ports.
Managed Server Names	no default	required	Comma-delimited list of the names of the Managed Servers to be provisioned. For example: Appserver1, Appserver2, Appserver3. **Note:** The order of the server names specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Ports, and Managed Server SSL Ports.
Managed Server Ports	no default	required	Comma-delimited list of the ports on which the Managed Servers will listen. **Note:** The order of the ports specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Names, and Managed Server SSL Ports.

Additional Parameters Defined in this Step: Weblogic Managed Server Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Managed Server SSL Ports	no default	optional	Comma-delimited list of SSL ports on which the Managed Servers will listen. **Note:** The order of the SSL ports specified must match the order specified in the following parameters: Managed Server Hostnames, Managed Server Names, and Managed Server Ports.
Private Key Alias	no default	optional	The keystore attribute that defines the string alias used to store and retrieve the server's private key.
Setup Server Custom SSL Stores	no default	required	Determines whether you want to run Secure Socket Layer (SSL) with the demo SSL certificates or with your own custom keystore and truststore. Valid values are true or false. If Setup Server Custom SSL Stores is true, the following parameters must also be specified: Custom KeyStore Path, Custom KeyStore PassPhrase, Custom TrustStore Path, Custom TrustStore PassPhrase, and Private Key Alias.
WLST Call Wrapper	no default	required	Command that will invoke the WebLogic Scripting Tool (WLST). For example: `su <user> /opt/oracle/WebLogic/install/common/bin/wlst.sh` The fully qualified path will vary depending on where you installed the product. The <user> must have appropriate permissions.

HP Database and Middleware Automation (10.10)

Provision WebLogic Cluster

This workflow creates a WebLogic cluster configuration from an existing installation and domain of WebLogic and adds the existing Managed Servers to the cluster configuration.

This workflow is optional. Use it only if you want to organize your Managed Servers into a cluster. Clusters allow your WebLogic environment to be highly-available and load-balanced.

Your cluster can span the Managed Servers on a single machine (a vertical cluster) or across multiple machines (a horizontal cluster).

The following reference architecture diagram gives an example of what this workflow does:
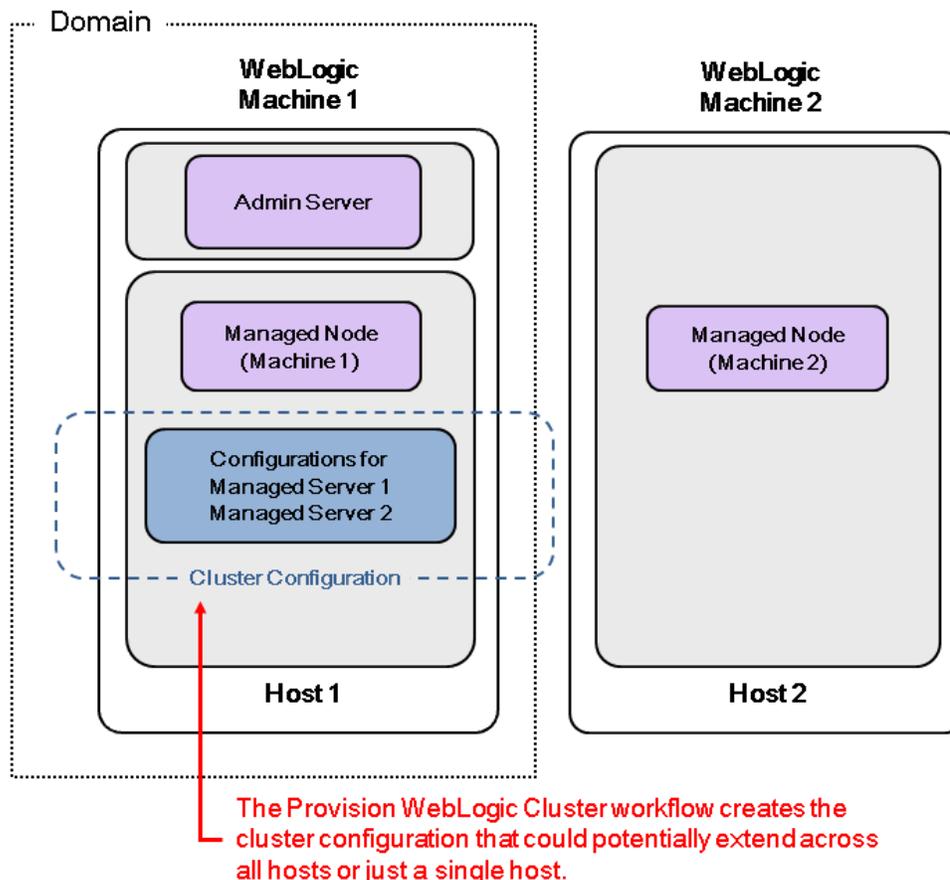
Before you can run this workflow you need to have an operational WebLogic 11g or 12c environment. You can use the WebLogic provisioning workflows to do this:

1. Run the Provision WebLogic Software workflow to provision the WebLogic 11g or 12c software on all the target host servers.

2. Then run the Provision WebLogic Domain and Admin Server workflow to provision the domain and the Administration Server on the designated target host server.

3. Then run the Provision WebLogic Managed Servers workflow to provision the Managed Servers on the designated target host server.

4. After you have created an operational WebLogic environment, run this workflow to create the

desired horizontal or vertical cluster configuration.

5. If you create a horizontal cluster, then run the Increase WebLogic Domain Span workflow to increase the span of the domain.

> **Note:** If you do not plan to expand the domain, you should manually start the cluster after running this workflow.

For additional information about how this workflow can be used with other provisioning workflows see How to Use the Workflows Together on page 32.

You can specify input parameters to select either multicast or unicast cluster messaging mode for your cluster.

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 the Provision WebLogic Cluster workflow:

1. This solution requires HP DMA version 10.10 (or later).

2. You have installed the Application Server Provisioning Solution Pack.

For more information about prerequisites for WebLogic 11g and 12c, refer to the WebLogic Product Documentation on page 110.

How this Workflow Works

The following information describes how the Provision WebLogic Cluster workflow works:

Overview

The workflow does the following:

- Prepares to provision the WebLogic cluster by setting up the command to be used in subsequent steps and validating input parameters.

- Creates the cluster configuration using the WebLogic Scripting Tool (WLST): accesses the domain information, creates the cluster, sets the cluster messaging mode to either multicast or unicast, assigns the Managed Server (or servers) to the cluster, then updates the domain.

- Stops and restarts the WebLogic Administration Server.

Validation Checks Performed

Much of the validation centers on the input parameters:

- Checks that the BEA Home and WLS Install Home files exist.

- Verifies that Multicast Port is null or a valid integer.

- If either Multicast Address or Multicast Port are null then the cluster messaging mode will be set to unicast. Otherwise it will be set to multicast.

Steps Executed

The Provision WebLogic Cluster workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure and all subsequent steps are skipped.

KEY

- Prepare to Provision Cluster
- Provision the Cluster
- Stop and Restart Admin Server

Get WebLogic Call-Wrappers

↓

Weblogic Cluster Validate Parameters

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Create Weblogic Cluster

↓

Weblogic Assign Managed Server to Cluster

↓

Stop Weblogic Admin Server

↓

Start Weblogic Admin Server
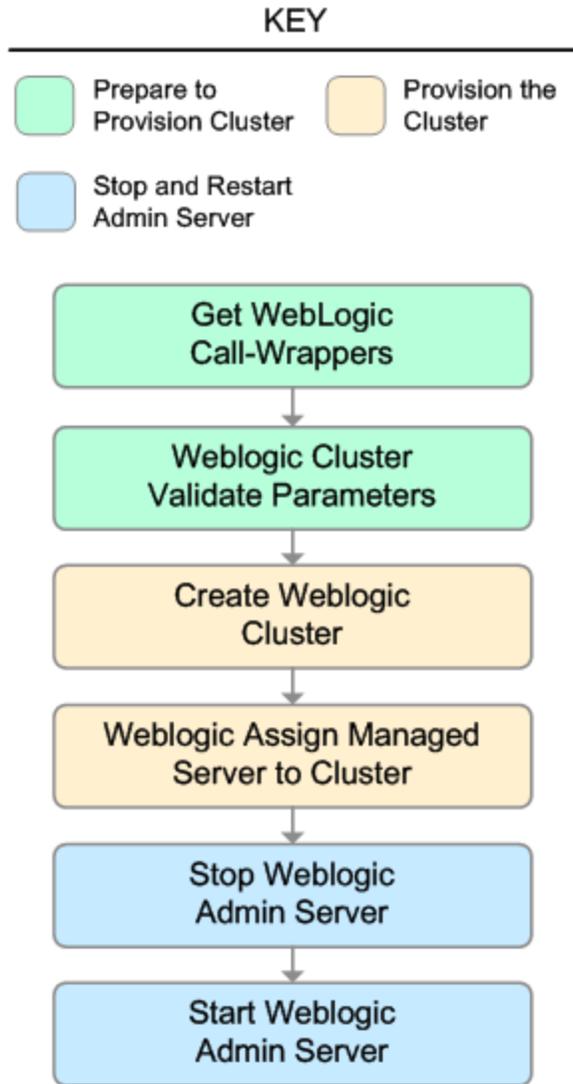
Steps Used in Provision WebLogic Cluster

Workflow Step	Description
Get WebLogic Call-Wrappers	This step creates the commands that subsequent steps will use to execute scripts and WebLogic Scripting Tool (WLST) operations.
Weblogic Cluster Validate Parameters	This step prepares the parameters needed to create a cluster and add Managed Servers to the cluster on WebLogic.
Create Weblogic Cluster	This step creates a cluster from an existing domain and installation of WebLogic.
Weblogic Assign Managed Server to Cluster	This step adds Managed Servers to an existing cluster on WebLogic.
Stop Weblogic Admin Server	This step stops the WebLogic Administration Server.
Start Weblogic Admin Server	This step starts the WebLogic Administration Server.

For parameter descriptions and defaults, see Parameters for Provision WebLogic Cluster on page 95.

How to Run this Workflow

The following instructions show you how to customize and run the Provision WebLogic Cluster workflow in your environment.

The workflow provides default values for some parameters. These default values are usually sufficient for a "typical" installation. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in Parameters for Provision WebLogic Cluster on page 95.

> **Note:** Before following this procedure, review the Prerequisites for this Workflow on page 87, and ensure that all requirements are satisfied.

To use the Provision WebLogic Cluster workflow:

1. Create a deployable copy of the workflow (see Create a Deployable Workflow on page 21).

2. Determine the values that you will specify for the following parameters:

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Weblogic Cluster Validate Parameters

Parameter Name	Default Value	Required	Description
Cluster Name	no default	required	The name of the new cluster. For example: ClusterAppServer.
Domain Path	no default	required	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Managed Servers	no default	required	Comma-delimited list of the names of the Managed Server (or servers) that will be added to the new cluster. For example: AppServer1, AppServer2.

Input Parameters for Weblogic Cluster Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Multicast Address	no default	optional	The multicast address that will be used by cluster members to communicate with each other. Specify this ONLY if you intend to use multicast for cluster communication.
Multicast Port	no default	optional	The multicast port (between 1 and 65535) that will be used by cluster members to communicate with each other. Specify this ONLY if you intend to use multicast for cluster communication.

Note: See Parameters for Provision WebLogic Cluster on page 95 for detailed descriptions of all input parameters for this workflow, including default values.

3. In the workflow editor, expose any additional parameters that you need. You will specify values for those parameters when you create the deployment.

4. Save the changes to the workflow (click **Save** in the lower right corner).

5. Create a new deployment (see Create a Deployment on page 22 for instructions).

6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed. You do not need to specify values for those parameters whose default values are appropriate for your environment.

7. On the Targets tab, specify one or more targets for this deployment.

Note: The target for this deployment should be set to the server where the WebLogic Administration Server is provisioned.

8. Save the deployment (click **Save** in the lower right corner).

9. Run the workflow using this deployment (see Run Your Workflow on page 26 for instructions).

Note: If you do not plan to expand the domain, you should manually start the cluster after running this workflow.

To verify the results:

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

Sample Scenario

This topic shows you typical parameter values for different use cases for the Provision WebLogic Cluster workflow.

Scenario 1: To use multicast

If you intend to use multicast for cluster communication, set both Multicast Address and Multicast Port to appropriate values.

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Example Value	Description
BEA Home	no default	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Weblogic Cluster Validate Parameters

Parameter Name	Example Value	Description
Cluster Name	see description	The name of the new cluster. For example: ClusterAppServer.
Domain Path	see description	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Managed Servers	see description	Comma-delimited list of the names of the Managed Server (or servers) that will be added to the new cluster. For example: AppServer1, AppServer2.
Multicast Address	237.0.0.101	The multicast address that will be used by cluster members to communicate with each other. Specify this ONLY if you intend to use multicast for cluster communication.
Multicast Port	9200	The multicast port (between 1 and 65535) that will be used by cluster members to communicate with each other. Specify this ONLY if you intend to use multicast for cluster communication.

Be sure that the default values for all remaining input parameters are appropriate for your environment (see Parameters for Provision WebLogic Cluster on page 95).

Scenario 2: To use unicast

If you intend to use unicast for cluster communication, do not set either Multicast Address or Multicast Port .

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Example Value	Description
BEA Home	no default	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Weblogic Cluster Validate Parameters

Parameter Name	Example Value	Description
Cluster Name	see description	The name of the new cluster. For example: ClusterAppServer.
Domain Path	see description	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Managed Servers	see description	Comma-delimited list of the names of the Managed Server (or servers) that will be added to the new cluster. For example: AppServer1, AppServer2.
Multicast Address		The multicast address that will be used by cluster members to communicate with each other. Specify this ONLY if you intend to use multicast for cluster communication.
Multicast Port		The multicast port (between 1 and 65535) that will be used by cluster members to communicate with each other. Specify this ONLY if you intend to use multicast for cluster communication.

Be sure that the default values for all remaining input parameters are appropriate for your environment (see Parameters for Provision WebLogic Cluster on the next page).

Parameters for Provision WebLogic Cluster

The following tables describe the required and optional input parameters for this workflow. Some of these parameters may not be initially visible in a deployment (see How to Expose Additional Workflow Parameters on page 116). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Following are tables for each of the steps used by this workflow where parameters are defined:

Parameters Defined in this Step: Get WebLogic Call-Wrappers

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Additional Parameters Defined in this Step: Weblogic Cluster Validate Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	see description	optional	Command that will execute this step (or subsequent steps) as a specific user. For UNIX targets, the default is: `/opt/hp/dma/client/jython.sh` running as root. For Windows targets, the default is: `jython` running as Administrator. **Caution:** This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.
Cluster Name	no default	required	The name of the new cluster. For example: ClusterAppServer.
Domain Path	no default	required	Fully qualified path where the domain and domain configuration will be created. For example: `/opt/weblogic/user_projects/domains`
Managed Servers	no default	required	Comma-delimited list of the names of the Managed Server (or servers) that will be added to the new cluster. For example: AppServer1, AppServer2.

Additional Parameters Defined in this Step: Weblogic Cluster Validate Parameters (continued)

Parameter Name	Default Value	Required	Description
Multicast Address	no default	optional	The multicast address that will be used by cluster members to communicate with each other. Specify this ONLY if you intend to use multicast for cluster communication.
Multicast Port	no default	optional	The multicast port (between 1 and 65535) that will be used by cluster members to communicate with each other. Specify this ONLY if you intend to use multicast for cluster communication.
WLST Call Wrapper	no default	required	Command that will invoke the WebLogic Scripting Tool (WLST). For example: `su <user> /opt/oracle/WebLogic/install/common/bin/wlst.sh` The fully qualified path will vary depending on where you installed the product. The <user> must have appropriate permissions.

Increase WebLogic Domain Span

This workflow increases the span of a WebLogic domain by adding other hosts to that domain. To accomplish this it moves the Managed Server configurations and cluster configuration to the other hosts, extends the cluster, starts the Managed Servers, and starts the cluster.

The basic process is to pack up the domain into a template file, send that file to the remote machines, and then unpack it into the correct locations.

This workflow is optional. Use it only if your domain spans more than one machine.

The following reference architecture diagram gives an example of what this workflow does:

The Increase WebLogic Domain Span workflow moves the Managed Server configurations and cluster configuration to Host 2, extends the cluster, increases the domain to encapsulate Host 2, and then starts the Managed Servers in the cluster.
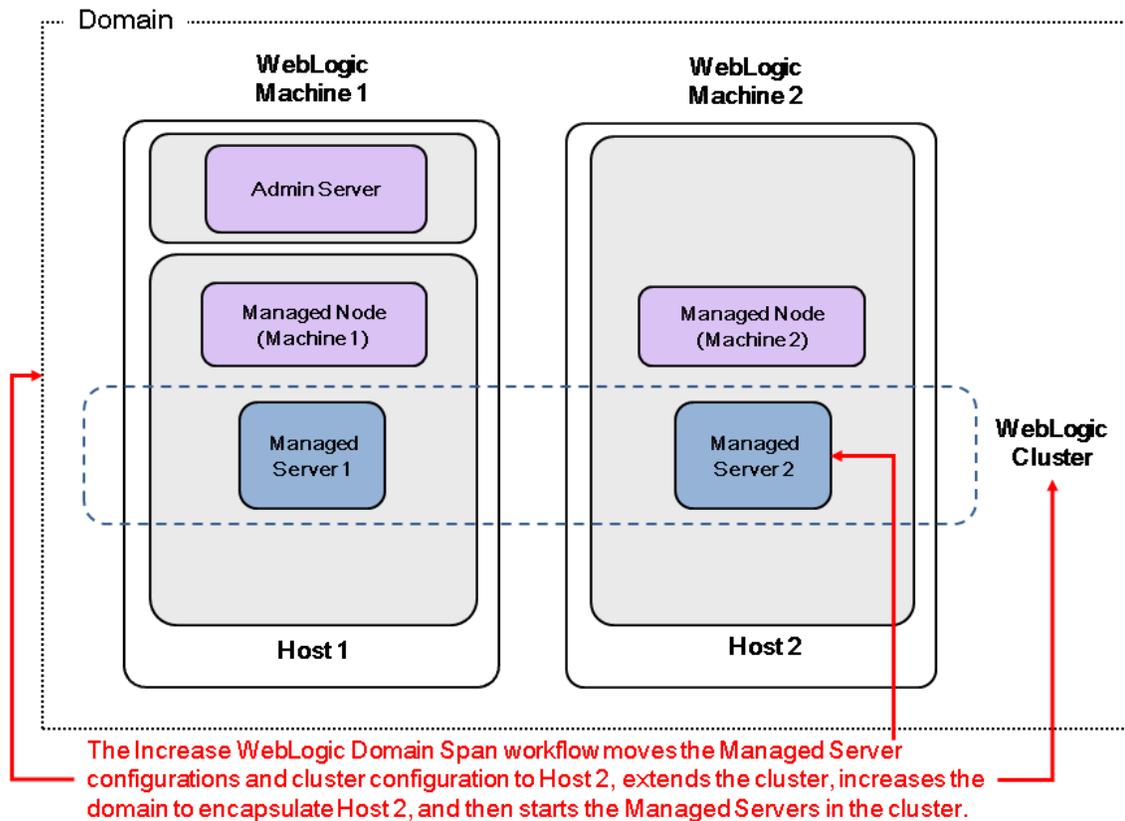
Before you can run this workflow you need to have an operational WebLogic 11g or 12c with a horizontal cluster. You can use the WebLogic provisioning workflows to do this:

1. Run the Provision WebLogic Software workflow to provision the WebLogic 11g or 12c software.

2. Then run the Provision WebLogic Domain and Admin Server workflow to provision the domain and the Administration Server.

3. Then run the Provision WebLogic Managed Servers workflow to create the configurations for all the Managed Servers.

4. Then run the Provision WebLogic Cluster workflow to create a horizontal cluster configuration.

5. Then run this workflow to increase the span of a domain by adding the other hosts to that domain.

For additional information about how this workflow can be used with other provisioning workflows see How to Use the Workflows Together on page 32.

> **Note:** Before running this workflow set up the SSH keys between the original domain's machine and the target machine (or machines).

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 the Increase WebLogic Domain Span workflow:

1. This solution requires HP DMA version 10.10 (or later).

2. You have installed the Application Server Provisioning Solution Pack.

3. SSH keys are set up between the original domain's machine and the target machine (or machines). These shared keys set up Trust IDs to log in without a password.

For more information about prerequisites for WebLogic 11g and 12c, refer to the WebLogic Product Documentation on page 110.

How this Workflow Works

The following information describes how the Increase WebLogic Domain Span workflow works:

Overview

The workflow does the following:

- Sets up the command to be used to increase the WebLogic domain span.

- Uses the pack utility to pack up the domain into a template file, sends that file to the remote machine (or machines), then uses the unpack utility to unpack it into the correct location.

  In more detail, this workflow uses the internal tool in WebLogic to jar up the configurations for the Managed Servers and the cluster configuration into an archive file. Then it pushes via Secure Copy (SCP) and moves the JAR file to the other machines. Finally, it uses the same utility to unjar the archive file onto the other machines.

- Starts up the cluster in the WebLogic domain.

Validation Checks Performed

This workflow checks that the BEA Home and WLS Install Home files exist.

Steps Executed

The Increase WebLogic Domain Span workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure and all subsequent steps are skipped.
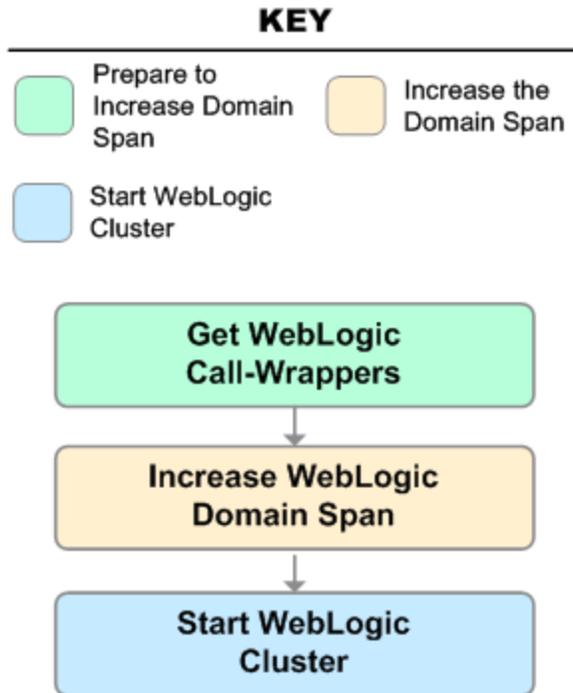
Steps Used in Increase WebLogic Domain Span

Workflow Step	Description
Get WebLogic Call-Wrappers	This step creates the commands that subsequent steps will use to execute scripts and WebLogic Scripting Tool (WLST) operations.
Increase WebLogic Domain Span	This step uses the pack and unpack utilities within the WebLogic product to pack up the domain configuration and unpack it on a remote target machine (or machines).
Start WebLogic Cluster	This step starts up the cluster in the WebLogic domain.

For parameter descriptions and defaults, see Parameters for Increase WebLogic Domain Span on page 107.

How to Run this Workflow

The following instructions show you how to customize and run the Increase WebLogic Domain Span workflow in your environment.

The workflow provides default values for some parameters. These default values are usually sufficient for a "typical" installation. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in Parameters for Increase WebLogic Domain Span on page 107.

> **Note:** Before following this procedure, review the Prerequisites for this Workflow on page 99, and ensure that all requirements are satisfied.

To use the Increase WebLogic Domain Span workflow:

1. Create a deployable copy of the workflow (see Create a Deployable Workflow on page 21).

2. Determine the values that you will specify for the following parameters:

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Increase WebLogic Domain Span

Parameter Name	Default Value	Required	Description
Local Domain Path	no default	required	Path to the local domain. If the specified path is a relative path, it is assumed to be relative to BEA Home. For example: `/opt/oracle/weblogic/user_ projects/domains/base_domain` where `/opt/oracle/weblogic` is the BEA Home.

Input Parameters for Increase WebLogic Domain Span (continued)

Parameter Name	Default Value	Required	Description

Local Template Path	no default	required	Path to the local template directory or the path to a template file. If the specified path is a relative path, it is assumed to be relative to BEA Home. For example:
			
			`/opt/oracle/weblogic/user_`
			`projects/domains/base_domain.jar`
			
			where `/opt/oracle/weblogic` is the BEA Home.

Remote Addresses	no default	required	Comma-delimited list of hosts (DNS addresses or IP addresses) that the domain will span.

Input Parameters for Start WebLogic Cluster

Parameter Name	Default Value	Required	Description
Admin Server Port	no default	optional	The non-SSL port on which the WebLogic Administration Server will run.
Cluster Name	no default	required	The name of the new cluster. For example: ClusterAppServer.
Weblogic Admin Password	no default	required	The password that will be used to authenticate with the WebLogic Administration Server.
WebLogic Admin User	weblogic	required	The WebLogic administrator account that will be used to authenticate with the Administration Server.

> **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 117).

> **Note:** This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives. See How to Expose Additional Workflow Parameters on page 116
>
> See Parameters for Increase WebLogic Domain Span on page 107 for detailed descriptions of all input parameters for this workflow, including default values.

3. In the workflow editor, expose any additional parameters that you need. You will specify values for those parameters when you create the deployment.

4. Save the changes to the workflow (click **Save** in the lower right corner).

5. Create a new deployment (see Create a Deployment on page 22 for instructions).

6. On the Parameters tab, specify values for the required parameters listed in step 2 and any

additional parameters that you have exposed.You do not need to specify values for those parameters whose default values are appropriate for your environment.

7. On the Targets tab, specify one or more targets for this deployment.

> **Note:** The target for this deployment should be set to the server where the WebLogic Administration Server is provisioned.
>
> The workflow pushes the configuration over to other hosts based on your input parameters.

8. Save the deployment (click **Save** in the lower right corner).

9. Run the workflow using this deployment (see Run Your Workflow on page 26 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 the workflow execution, the error will be logged, and the workflow terminates in the FAILURE state.

Optional: If you want to further verify the results:

1. View the `{BEAHOME}/logs/log.txt` file.

   This file is created after the installation is complete.

2. Look for specific information about what was installed.

Sample Scenario

It is very straightforward to run the Increase WebLogic Domain Span workflow. This topic shows you typical parameter values to use.

Typical parameters:

Input Parameters for Get WebLogic Call-Wrappers

Parameter Name	Example Value	Description
BEA Home	see description	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	see description	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Input Parameters for Increase WebLogic Domain Span

Parameter Name	Example Value	Description
Local Domain Path	see description	Path to the local domain. If the specified path is a relative path, it is assumed to be relative to BEA Home. For example: `/opt/oracle/weblogic/user_ projects/domains/base_domain` where `/opt/oracle/weblogic` is the BEA Home.
Local Template Path	see description	Path to the local template directory or the path to a template file. If the specified path is a relative path, it is assumed to be relative to BEA Home. For example: `/opt/oracle/weblogic/user_ projects/domains/base_domain.jar` where `/opt/oracle/weblogic` is the BEA Home.
Remote Addresses	server. company.com	Comma-delimited list of hosts (DNS addresses or IP addresses) that the domain will span.

Input Parameters for Start WebLogic Cluster

Parameter Name	Example Value	Description
Admin Server Port	8001	The non-SSL port on which the WebLogic Administration Server will run.
Cluster Name	see description	The name of the new cluster. For example: ClusterAppServer.

Be sure that the default values for all remaining input parameters are appropriate for your environment (see Parameters for Increase WebLogic Domain Span on the next page).

Parameters for Increase WebLogic Domain Span

The following tables describe the required and optional input parameters for this workflow. Some of these parameters may not be initially visible in a deployment (see How to Expose Additional Workflow Parameters on page 116). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Following are tables for each of the steps used by this workflow where parameters are defined:

Parameters Defined in this Step: Get WebLogic Call-Wrappers

Parameter Name	Default Value	Required	Description
BEA Home	no default	required	Fully qualified path to the middleware home directory that contains the WebLogic installation. For example: `/opt/oracle/weblogic`
WLS Install Home	no default	required	Fully qualified path to the directory where WebLogic Server will be installed. For example: `/opt/oracle/weblogic/wlserver12.1`

Additional Parameters Defined in this Step: Increase WebLogic Domain Span

Parameter Name	Default Value	Required	Description
Call Wrapper	see description	optional	Command that will execute this step (or subsequent steps) as a specific user. For UNIX targets, the default is: `/opt/hp/dma/client/jython.sh` running as root For Windows targets, the default is: `jython` running as Administrator **Caution:** This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.
Local Domain Path	no default	required	Path to the local domain. If the specified path is a relative path, it is assumed to be relative to BEA Home. For example: `/opt/oracle/weblogic/user_projects/domains/base_domain` where `/opt/oracle/weblogic` is the BEA Home.

Additional Parameters Defined in this Step: Increase WebLogic Domain Span (continued)

Parameter Name	Default Value	Required	Description
Local Template Path	no default	required	Path to the local template directory or the path to a template file. If the specified path is a relative path, it is assumed to be relative to BEA Home. For example: `/opt/oracle/weblogic/user_ projects/domains/base_domain.jar` where `/opt/oracle/weblogic` is the BEA Home.
Remote Addresses	no default	required	Comma-delimited list of hosts (DNS addresses or IP addresses) that the domain will span.
Remote Domain Path	no default	optional	Path where the domain will be placed on the remote machine. If the specified path is a relative path, it is assumed to be relative to BEA Home.
Remote Template Path	no default	optional	Path to the remote template directory or the path to a template file. If the specified path is a relative path, it is assumed to be relative to BEA Home. This parameter defaults to Local Template Path.

Additional Parameters Defined in this Step: Start WebLogic Cluster

Parameter Name	Default Value	Required	Description
Admin Server Port	no default	optional	The non-SSL port on which the WebLogic Administration Server will run.
Cluster Name	no default	required	The name of the new cluster. For example: ClusterAppServer.
WLST Call Wrapper	no default	required	Command that will invoke the WebLogic Scripting Tool (WLST). For example: `su <user> /opt/oracle/WebLogic/install/ common/bin/wlst.sh` The fully qualified path will vary depending on where you installed the product. The <user> must have appropriate permissions. **Caution:** This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.

Additional Parameters Defined in this Step: Start WebLogic Cluster (continued)

Parameter Name	Default Value	Required	Description
Weblogic Admin Password	no default	required	The password that will be used to authenticate with the WebLogic Administration Server.
WebLogic Admin User	weblogic	required	The WebLogic administrator account that will be used to authenticate with the Administration Server.

Chapter 4

Reference Information

This chapter contains the following information:

Topic	Description
WebLogic Product Documentation	Links to current product documentation for WebLogic 11g and 12c
HP DMA Documentation	Links to additional HP DMA documentation

WebLogic Product Documentation

For product documentation for WebLogic 11g and 12c, see:

http://www.oracle.com/technetwork/middleware/weblogic/documentation/index.html

For the current list of hardware and software requirements, as well as supported platforms for WebLogic 11g and 12c, see:

http://www.oracle.com/technetwork/middleware/weblogic/documentation/index.html

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

HP DMA Documentation

For information about using the HP DMA web interface, see the *HP DMA User Guide* and the *HP DMA Administrator Guide*.

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

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

Chapter 5

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

How to Expose Additional Workflow Parameters

How to Use a Policy to Specify Parameter Values

How to Import a File into the Software Repository

HP Database and Middleware Automation (10.10)

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.

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.

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.

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

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

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:

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 *HP DMA User Guide*. This document is available on the HP Software Product Manuals web site: http://h20230.www2.hp.com/selfsolve/manuals

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 the 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 *HP DMA User Guide* for details.

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 Password: a

Discovery.Web Service Password
DTE - Policy.Password
MyParameterValues.MyAdminPassword
MyParameterValues.MyAdminUser
MyParameterValues.MyDBUser
MyParameterValues.MyDBUserPassword
oracle software.oracle software

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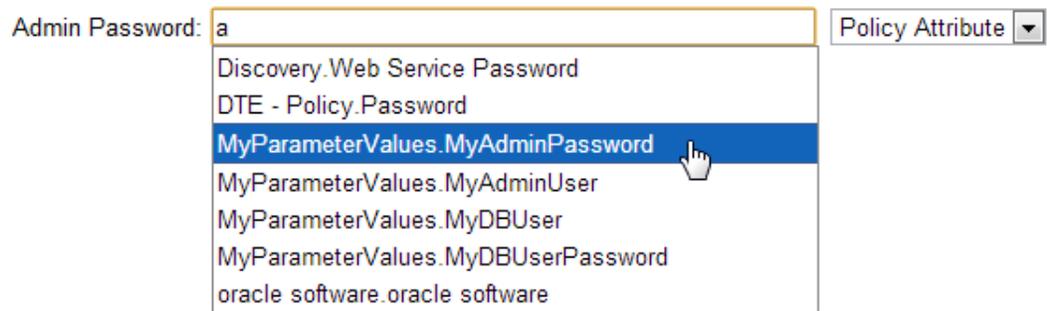
c. From the drop-down list, select the attribute that you want to reference. For example:

Admin Password: MyParameterValues.MyAdminPassword   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 6

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 DMA on the next page

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 permissions for organizations, workflows, steps, policies, and deployments. Users are assigned to roles, and they gain access to these automation items according to the permissions and capabilities defined for their roles.

Roles are assigned by your server management tool administrator. They are then registered in HP DMA by your HP DMA administrator.

Your HP DMA administrator will ensure that the users in your environment are assigned roles that grant them the permissions and capabilities they need to accomplish their tasks. For example:

- To create a workflow, your role must have Workflow Creator capability.
- To view a workflow, your role must have Read permission for that workflow.
- To edit a workflow, your role must have Write permission for that workflow.
- To view a deployment, your role must have Read permission for that deployment.
- To modify a deployment, your role must have Write permission for that deployment.
- To run a deployment, your role must have Execute permission for that deployment and Deploy permission for the organization where it will run.

Capabilities determine what features and functions are available and active in the HP DMA UI for each user role.

For more information, see the *HP DMA Administrator Guide*. This document is available on the HP Software Product Manuals web site: http://h20230.www2.hp.com/selfsolve/manuals

Discovery in HP DMA

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

You must explicitly initiate the process of discovery—it is not automatic. See the *HP DMA User Guide* for instructions. This document is available on the HP Software Product Manuals web site: http://h20230.www2.hp.com/selfsolve/manuals

Glossary

A

automation items

The umbrella term automation items is used to refer to those items to which role-based permissions can be assigned. Automation items include workflows, deployments, steps, and policies.

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 DMA version 9.11 (and later).

C

capability

Capabilities are collections of related privileges. There are three capabilities defined in HP DMA. Login Access capability enables a user to log in to the web interface. This capability does not guarantee that this user can view any

organizations or automation items—permissions are required to access those items. Workflow Creator capability enables a user to create new workflows and make copies of other workflows. Administrator capability enables a user to perform any action and view all organizations. If you have Administrator capability, you do not need Workflow Creator capability. The Administrator can assign any of these capabilities to one or more roles registered roles.

connector

HP DMA includes a Connector component that enables it to communicate with your server management tool. You must configure the Connector before you can run an workflow against a target.

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.

custom field

Custom Fields are used to customize workflows or show information about the environment. Custom Fields can be used in workflow steps to automatically supply information that is specific to an organization, server, instance, or database.

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.

F

function

Functions are reusable pieces of code that can be included in automation steps. Any common routine or operation that multiple steps perform is a good candidate for a function. Functions can be tagged with keywords indicating the language in which they are written and the operating system with which they work. Functions are "injected" into the step code just prior to step execution.

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 it's 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

organization

An organization is a logical grouping of servers. You can use organizations to separate development, staging, and production resources - or to separate logical business units.

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.

policy

Policies are reusable sets of attributes that can be used as parameter values in deployments. Deployments can reference policy attributes to change the automation behavior. Policies provide values for input parameters. They can contain fixed values or reference Custom Fields. Policies enable HP DMA to manage groups of hundreds or thousands of servers at a time without the need to configure each individual server.

HP Database and Middleware Automation (10.10)

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.

role

Each HP DMA user has one or more roles. Roles are used to grant users permission to log in to and to access specific automation items and organizations. Roles are defined in your server management tool. Before you can associate a role with an automation item or organization, however, you must register that role in HP DMA.

S

smart group

Smart Groups are dynamic groups of servers, instances, or databases defined by some criteria. They are used to specify targets for deployments. As information about an environment object changes, its membership in the groups is re-evaluated.

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.

solution pack

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 a solution pack, you must first create a deployable copy of that template and then customize that copy for your environment. Solution packs are organized by function - for example: database patching or application server provisioning.

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.

workflow templates

A workflow template is a read-only workflow that cannot be deployed. To run one of the workflows included in a solution pack, you must first create a deployable copy of the workflow template and then customize that copy for your environment.

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