

HP Database and Middleware Automation Solution Packs

For the Linux, Solaris, AIX, HP-UX, and Windows operating systems

Software Version: 9.14

Application Server Provisioning - JBoss Workflows

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Software Release Date: June 2012



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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.

Chapter 1

Quick Start Tutorial

This topic shows you how to install your solution pack and run a workflow. There are five basic steps:

1. [Install the Solution Pack below](#)
2. [Create a Deployable Workflow on next page](#)
3. [Create a Deployment on page 11](#)
4. [Run Your Workflow on page 12](#)
5. [View the Results on page 12](#)

This tutorial provides a simplified demonstration using the Provision Open Source JBoss 7 StandAlone Mode workflow. Default values are supplied for most input parameters. Before executing these procedures, make sure that these default values are suitable for your environment.

Note: See the [Reference Information](#) included in this guide for descriptions of all available input parameters for this workflow, 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: For information about other automation scenarios, see [How To Use This Solution](#).

Install the Solution Pack

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

To install the solution pack:

1. Go to [HP Live Network](#) to view a list of the latest available HP DMA solution packs.
2. Download the pertinent solution pack file from [HP Software Support Online](#).
3. Extract the ZIP file that contains your solution pack (for example: ASProvisioning.zip).
4. On the system where you downloaded the solution pack, open a web browser, and log in to the HP DMA server using an account with administrative privileges.

For instructions, see “Getting Started” in the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

5. On the Solutions > Installed tab, click the **Browse** button in the lower right corner. The Choose File dialog opens.
6. Locate and select the ZIP file that you extracted in step 3, and click **Open**.
7. Click **Import solution pack**.

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.

To create a deployable copy of the workflow template:

1. In the HP DMA web interface, go to Automation > Workflows.
2. From the list of workflows, select the Provision Open Source JBoss 7 StandAlone Mode workflow template.
3. Click the **Copy** button in the lower left corner.
4. 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 – Must be JBoss
 - Target level – Must be a Server
5. On the Roles tab, grant Read access to at least one user or group and Write access to at least one user or group.
6. Click **Save**.

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

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

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

For more information about creating and working with workflows, see “Workflows” in the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

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 (in this case, a Server).

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 workflow that you just created.
 - Schedule – Frequency or date when the workflow will run. If you select None, the workflow will run only once when you explicitly tell it to run.
3. From the list of AVAILABLE servers on the left side of the Targets area, click the **ADD** link for the target (or targets) where the workflow will run.

Note: If you are running a bridged execution workflow, the targets that you select on the Deployment page will be included in the lists of available targets that you can choose from on the Run page.

For more information about bridged execution workflows, see the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

4. On the Parameters tab, specify values for the input parameters listed there.

These are a subset of the required parameters for this workflow. Parameters that are not visible in the deployment will have default values.

Note: See the [Reference Information](#) included in this guide for descriptions of all available input parameters for this workflow, including default values.

5. If you do not want to explicitly enter the values here, you can create a policy that stores the values and then reference that policy in your deployment (see [Using a Policy to Specify Parameter Values on page 78](#)).
6. Click **Save**.

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

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

7. 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 server 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:
 - a. Go to the Automation > Run area.
 - b. In the list of WORKFLOWS on the left side, select the workflow that you created.
 - c. In the list of DEPLOYMENTS in the center, double-click the deployment that you just created.
2. If you are running a single-target workflow, select the check box for each target where you want to run the workflow.

If you are running a bridged execution workflow, click the **SELECT** link to specify each target. The targets that are available to choose from here are the targets that you selected on the Deployment page.

For more information about bridged execution workflows, see the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

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



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

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

View the Results

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

- 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**.

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

While the workflow is running, the History page shows nothing in the status column. A workflow that results in the **FINISHED** state also shows nothing in the status column on this page.

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:

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

Chapter 2

About this Solution

The HP Database and Middleware Automation Application Server Provisioning solution contains two JBoss workflows:

Workflow Name	Purpose
Provision Red Hat JBoss StandAlone on page 24	This workflow installs a new instance of Red Hat JBoss Enterprise Application Platform (EAP) and/or Enterprise Web Platform (EWP) version 5.1.1 and creates a stand-alone application server. You can use the workflow to install up to four instances per server.
Provision Open Source JBoss 7 StandAlone Mode on page 34	This workflow installs a new instance of the open source JBoss Application Server 7 and creates a stand-alone application server.

Although minimal JBoss knowledge is required to run these workflows using the default settings, the workflows are highly customizable and can support complex environment-specific deployment scenarios.

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

- [Audience below](#)
- [Supported Products and Platforms on next page](#)
- [Prerequisites for this Solution on next page](#)
- [How this Solution is Organized on page 16](#)
- [Additional Resources on page 21](#)

Audience

This solution is designed for IT architects and engineers who are responsible for planning, implementing, and maintaining application-serving environments using Red Hat JBoss Enterprise Application Platform (EAP) and/or Enterprise Web Platform (EWP) version 5.1.1.

To use this solution, you should be familiar with JBoss and its requirements (see links to the [JBoss Product Documentation on page 77](#)).

Supported Products and Platforms

The JBoss provisioning workflows are supported on Linux, Solaris, and Windows platforms:

Operating Systems

For specific operating system versions supported, see the *HP Database and Middleware Automation version 9.14 Support Matrix* available in the HP Software product manuals library located here: <http://h20230.www2.hp.com/selfsolve/manuals>

Hardware Requirements

- See the *HP Server Automation Quick Reference: SA Installation Requirements* or the *HP Server Automation Standard/Advanced Installation Guide*.
- For JBoss hardware and software requirements, see the [JBoss Product Documentation on page 77](#)

HP Software Requirements

This solution can be used with the following HP products:

- HP Server Automation version 9.11 (or later)
- HP Database and Middleware Automation Web Server version 6.0.17 (or later)

Bridged execution workflows can only be used with HP Server Automation version 9.11 (or later).

Prerequisites for this Solution

The following prerequisites must be satisfied before you can run the JBoss provisioning workflows in this solution pack:

- This workflow requires unchallenged `sudo` access to a user (typically root) who can access all required files and directories.
- The workflow requires the Java Development Kit (JDK) version 1.6 update 24.

Note: There are also specific prerequisites for each workflow.

How this Solution is Organized

In HP DMA, a workflow executes a process—such as installing a software product or creating a database.

A solution pack contains one or more related workflow templates. This solution contains the following workflow templates:

Provision Red Hat JBoss StandAlone

Use this workflow to perform one or both of the following actions:

- Install Red Hat JBoss Enterprise Application Platform (EAP) version 5.1.1 and the Java Software Development Kit (SDK) version 1.6. Start a single, default profile application server.
- Install Red Hat JBoss Enterprise Web Platform (EWP) version 5.1.1 and the Java SDK version 1.6. Start a single, default profile application server.

You can use the workflow to install up to four JBoss instances per server.

The workflow performs checks to determine whether the JBoss and Java binaries exist on the target server. If they do not, the workflow downloads them from the SA software repository.

The workflow also performs validation checks at the operating system level, including file system space checks and Java version level checks.

Provision Open Source JBoss 7 StandAlone Mode

Use this workflow to install the open source JBoss Application Server 7 Community version (JBoss AS 7) and start a single, default profile application server.

The workflow performs checks to determine whether the JBoss and Java binaries exist on the target server. If they do not, the workflow downloads them from the SA software repository.

The workflow also performs validation checks at the operating system level, including file system space checks and Java version level checks.

What's Inside

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

The screenshot displays the HP Server Automation console interface. At the top, the page title is "Database & Middleware Automation" with a user session for "myserver.mycompany.com" and "User: admin". The navigation menu includes "Home", "Automation", "Reports", "Environment", "Solutions", and "Setup". The "Automation" section is active, with sub-tabs for "Workflows", "Steps", "Functions", "Policies", "Deployments", "Run", "Console", and "History".

The main content area is titled "Provision WebSphere 8 and StandAlone". It features four tabs: "Documentation" (selected), "Workflow", "Deployments", and "Roles". The "Documentation" tab shows the following details:

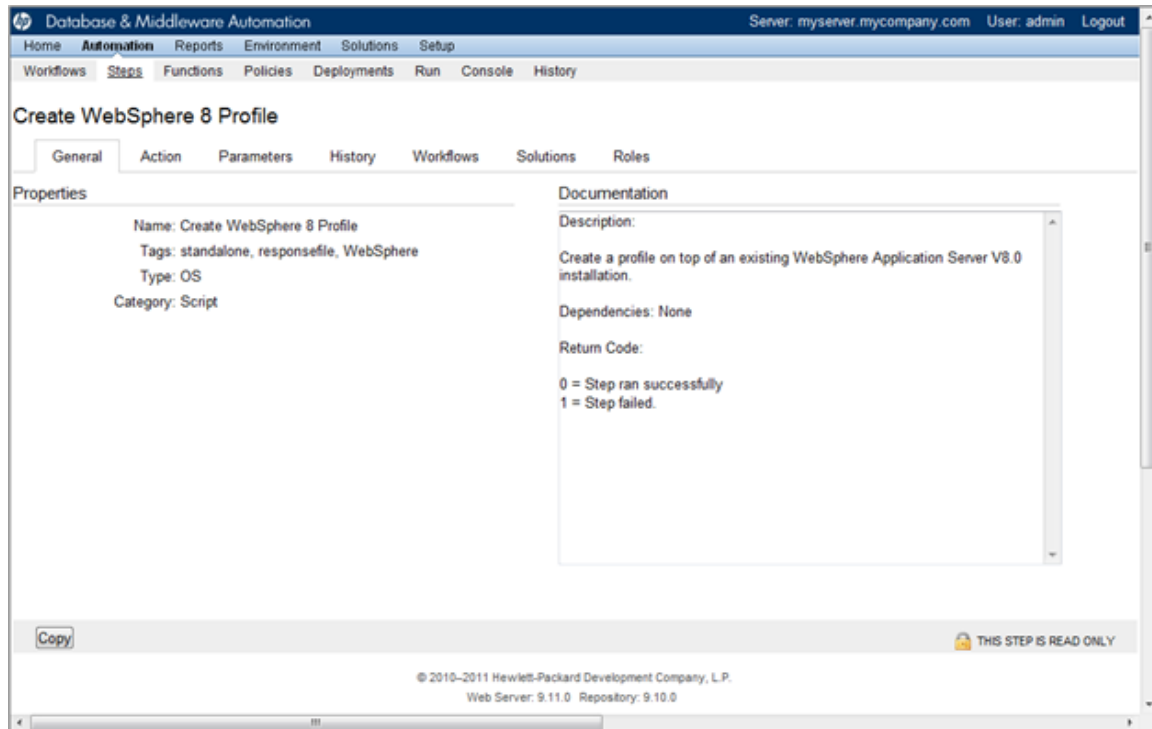
- Name:** Provision WebSphere 8 and StandAlone
- Tags:**
- Type:** OS
- Target level:** Server

The "Documentation" section is expanded to show:

- Purpose:** This workflow installs a new instance of IBM WebSphere Application Server V8.0 and creates a Standalone Agent profile.
- Platforms:** This workflow installs the IBM WebSphere Application Server V8.0 ND core product binaries on the following operating system platforms:
 - Red Hat Enterprise Linux
 - AIX
 - Solaris
 - Windows ServerFor a list of the specific OS versions supported, refer to the User Guide for this solution pack (see Additional Documentation below).
- Parameters:** The following characters cannot be used in the Admin User, Cell Name, Node Name, or Profile Name parameters: / \ * . : ; = + ? [< > & % ' "] > # \$ ^ { }

At the bottom of the console, there are utility buttons for "Copy", "EXPORT", and "EXTRACT POLICY". The footer contains the copyright information: "© 2010–2011 Hewlett-Packard Development Company, L.P. Web Server: 9.11.0 Repository: 9.10.0".

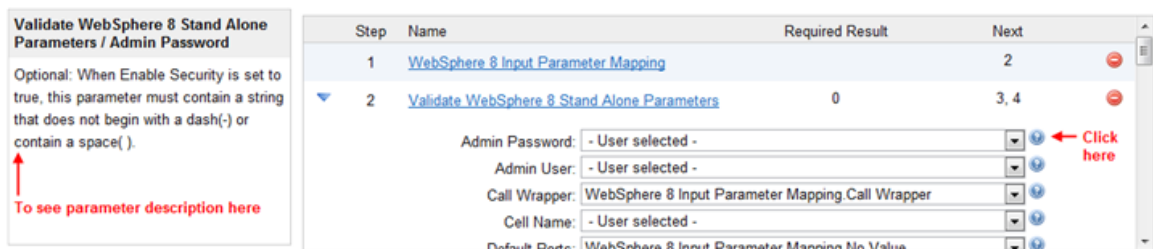
A workflow consist of a sequence of steps. Each step performs a very specific task. Each step includes a documentation panel that briefly describes its function.



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 also displayed in the following locations in the HP DMA web interface:

- On the Workflow tab for each workflow.



- On the Parameters tab for each step in the workflow

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

Home Automation Reports Environment Solutions Setup

Workflows Steps Functions Policies Deployments Run Console History

Validate WebSphere 8 Stand Alone Parameters

General Action Parameters History Workflows Solutions Roles

Input parameters

Name	Value	Description
Admin Password	<input type="text"/>	Optional: When Enable Security is set to true, this p
Admin User	<input type="text"/>	Optional: When Enable Security is set to true, this p
Call Wrapper	<input type="text"/>	Required: Command that will execute the step as a
Cell Name	<input type="text"/>	Required: Unique cell name that does not contain ar
Default Ports	<input type="text"/>	Optional: Provides the option to assign default ports
Developer Server	<input type="text"/>	Optional: Use this parameter for development enviro
Enable Security	<input type="text"/>	Required: Enables administrative security. Must be :
Host Name	<input type="text"/>	Required: Hostname or IP address of the target mac
Install Manager Binary Location	<input type="text"/>	Required: Fully qualified path to the compressed Ins
Install Manager Extract Location	<input type="text"/>	Required: Fully qualified path where the compressec
Install Manager Install Location	<input type="text"/>	Required: Fully qualified path where Install Manager
Keystore Password	<input type="text"/>	Optional: Sets the password for all keystore files cre
License Acceptance	<input type="text"/>	Required: Acknowledges that the end user agrees to
Node Name	<input type="text"/>	Required: Unique node name that cannot contain an
Omit Action	<input type="text"/>	Optional: Enables you to prevent certain optional fea
Personal CertDN	<input type="text"/>	Optional: Distinguished name of the personal certifi
Personal CertValidity Period	<input type="text"/>	Optional: Amount of time in years that the personal .
Ports File	<input type="text"/>	Optional: Fully qualified path to a file that defines po

- On the Parameters tab in the deployment (organized by step)

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

Home Automation Reports Environment Solutions Setup

Workflows Steps Functions Policies **Deployments** Run Console History

Example Deployment

Targets Parameters Roles

Validate WebSphere 8 Stand Alone Parameters

Admin Password: Enter at runtime
Optional: When Enable Security is set to true, this parameter must contain a string that does not begin with a dash(-) or contain a space().

Admin User: Enter at runtime
Optional: When Enable Security is set to true, this parameter must contain a string that does not begin with a dash(-), a period (.), or a space(.). It cannot contain any of the following characters / \ * , ; = + ? | < > & % ' " [] > # \$ ^ { }.

Cell Name: Enter at runtime
Required: Unique cell name that does not contain any of the following special characters / \ * , ; = + ? | < > & % ' " [] > # \$ ^ { }. If you plan to federate into an existing cell later, make sure that this name is not the same as the existing cell name.

Enable Security: Enter at runtime
Required: Enables administrative security. Must be set to either true or false. If Enable Security is true, the Admin User and Admin Password parameters must have values.

Install Manager Binary Location: Enter at runtime
Required: Fully qualified path to the compressed Install Manager software package on the target machine.

Install Manager Extract Location: Enter at runtime
Required: Fully qualified path where the compressed software will be extracted on the target machine.

All parameters used by the workflows in this solution pack are also described in the [Reference Information on page 42](#) for this solution.

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 (see [Create a Deployable Workflow on page 10](#)).

Additional Resources

If you are using HP Server Automation version 9.10 (or later), see these documents:

- *HP Server Automation User Guide: Application Deployment Manager*
- *HP Server Automation User Guide: Database and Middleware Automation*

If you are using HP Server Automation version 9.0x, see these documents:

- *HP Database and Middleware Automation User Guide*
- *HP Server Automation Integration Guide*

If you are using HP Database and Middleware Automation version 1.00, see these documents:

- *HP Database and Middleware Automation Installation Guide*
- *HP Database and Middleware Automation User Guide*

Chapter 3

How to Use this Solution

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.

To perform a simple installation, you can use the default values for most parameters. To use more advanced features of this solution, you will need to expose additional parameters.

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

Note: Each of these steps is explained in greater detail in the "How to Use this Workflow" topic associated with each workflow.

The information presented here assumes the following:

- HP DMA is installed and operational.
- At least one suitable target server is available (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.

Note: All parameters used by each workflow in this solution are described in the [Reference Information on page 42](#).

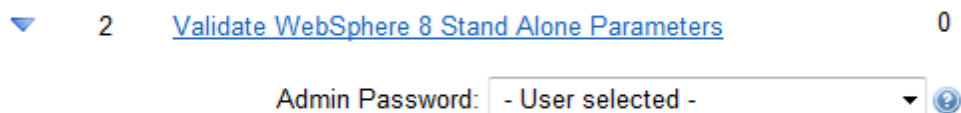
How to Expose Additional Workflow Parameters

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 (see [Create a Deployable Workflow on page 10](#)).
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.

Provision Red Hat JBoss StandAlone

Use this workflow to perform one or both of the following actions:

- Install Red Hat JBoss Enterprise Application Platform (EAP) version 5.1.1 and the Java Software Development Kit (SDK) version 1.6. Start a single, default profile application server.
- Install Red Hat JBoss Enterprise Web Platform (EWP) version 5.1.1 and the Java SDK version 1.6. Start a single, default profile application server.

You can use the workflow to install up to four JBoss instances per server.

The workflow performs checks to determine whether the JBoss and Java binaries exist on the target server. If they do not, the workflow downloads them from the SA software repository.

The workflow also performs validation checks at the operating system level, including file system space checks and Java version level checks.

Topic	Information Included
Prerequisites for this Workflow on next page	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on page 26	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 29	Instructions for running this workflow in your environment
Sample Scenarios on page 32	Examples of typical parameter values for this workflow

The process of deploying and running this workflow is the same for all scenarios, but the parameters required will differ depending on the specific scenario that you are implementing.

The workflow provides default values for most parameters. These default values are usually sufficient for a typical provisioning scenario. 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 Red Hat JBoss StandAlone on page 44](#).

Note: To view detailed information about the steps included in this workflow, see the [Steps in this Workflow](#).

Prerequisites for this Workflow

The following prerequisites must be satisfied before you can run the [Provision Red Hat JBoss StandAlone on previous page](#) workflow:

1. The workflow requires unchallenged `sudo` access to a user (typically root) who can access all required files and directories.
2. The workflow requires the Java Development Kit (JDK) version 1.6 update 24.
3. The workflow supports Red Hat JBoss 5.1.1 ZIP installs.
4. Adequate disk space must be available to install the JBoss and Java binaries.

For information about prerequisites for JBoss, refer to the [JBoss Product Documentation on page 77](#).

How this Workflow Works

This topic contains the following information about the [Provision Red Hat JBoss StandAlone](#) workflow:

Overview

Use this workflow to perform one or both of the following actions:

- Install Red Hat JBoss Enterprise Application Platform (EAP) version 5.1.1 and the Java Software Development Kit (SDK) version 1.6. Start a single, default profile application server.
- Install Red Hat JBoss Enterprise Web Platform (EWP) version 5.1.1 and the Java SDK version 1.6. Start a single, default profile application server.

You can use the workflow to install up to four JBoss instances per server.

The workflow performs checks to determine whether the JBoss and Java binaries exist on the target server. If they do not, the workflow downloads them from the SA software repository.

The workflow also performs validation checks at the operating system level, including file system space checks and Java version level checks.

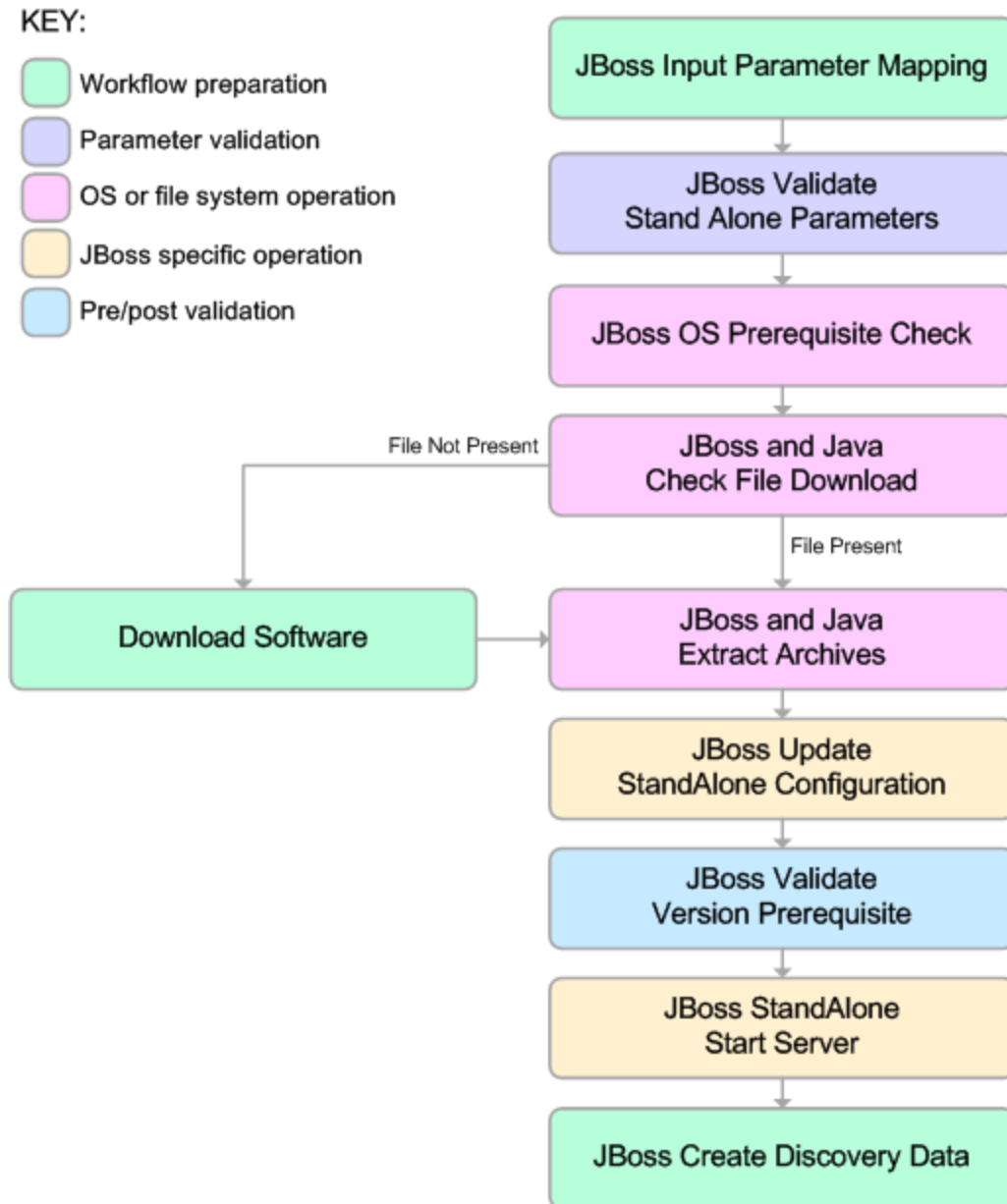
Validation Checks Performed

The workflow checks the following things prior to extracting the binaries. If any of these checks fails, the workflow fails.

1. All required parameters have values. If any required parameter does not have a value—either a value that you specify or a default value—the workflow fails.
2. All required libraries are present (see [Prerequisites for this Workflow on previous page](#)).
3. The operating system is a supported platform.
4. Sufficient disk space is available to extract the binary files from the compressed archive.
5. Sufficient disk space is available to install JBoss and Java.

Steps Executed

The [Provision Red Hat JBoss StandAlone](#) 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.



Process Flow

This workflow performs the following tasks:

1. Creates the call wrapper and determines the target server platform type.
2. Validates the parameters needed to install JBoss and Java and create a stand-alone profile (see the [validation checks](#) performed).
3. Checks the following:
 - a. File system space requirements where JBoss and Java will be installed.
 - b. Temporary space requirements where the compressed software will be extracted before it is installed.
4. Determines whether the JBoss and Java binary archives are present on the target server. If either archive is not present, the workflow downloads it from the SA software repository.
5. Extracts the JBoss and Java binary archives to the specified directories.
6. Creates a default profile for a stand-alone application server.
7. Starts the new stand-alone JBoss application server.
8. Captures information learned during the provisioning process in HP DMA metadata fields.

How to Run this Workflow

This topic explains how to customize and run the [Provision Red Hat JBoss StandAlone](#) workflow in your environment.

Note: Prior to running this workflow, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

Tip: To learn the basic steps required to deploy and run any workflow, see the [Quick Start Tutorial on page 9](#).

To customize and run the Provision Red Hat JBoss StandAlone workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 10](#)).
2. Determine the values that you will specify for the following parameters. These are the parameters that are visible in the deployment by default.

Step Name	Parameter Name	Default Value	Description
JBoss Input Parameter Mapping on page 51	JBoss User	root	In a Unix environment, this is the user who will install and run JBoss. If a JBoss user is specified, this user must have access to write into the install directory. Currently, this parameter is not supported on Windows targets.
JBoss Validate Stand Alone Parameters on page 52	Admin Password	no default	The password for the Admin User account. Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 78 .
	Admin User	no default	The user who will manage the JBoss environment.
	Install Dir	UNIX: /opt/jboss Windows: C:\jboss	Fully qualified path of the location where the Java and JBoss binaries will be uncompressed. If the Java software package is not available in this location, it will be downloaded from the software repository and placed in this location.

Step Name	Parameter Name	Default Value	Description
	JBoss Binary Archive	no default	Fully qualified path where the compressed JBoss software package should be found on the target server. If the JBoss software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
	Java Binary Archive	no default	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
	JBoss Type	no default	Type of JBoss will be installed. Valid options are EAP (Enterprise Application Platform) or EWP (Enterprise Web Platform).
	Trust SSL Certificates	no default	If True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
	Web Service Password	no default	Password for the HP DMA Discovery web service API.
	Web Service URL	no default	URL for the HP DMA Discovery web service API.
	Web Service User	no default	User capable of modifying the managed environment through the HP DMA Discovery web service API.

See [Parameters for Provision Red Hat JBoss StandAlone on page 44](#) for detailed descriptions of all input parameters for this workflow, including default values.

- In the workflow editor, expose any additional parameters that you need (see [How to Expose Additional Workflow Parameters on page 23](#)). You will specify values for those parameters when you create the deployment.
- Save the changes to the workflow (click **Save** in the lower right corner).
- Create a new deployment (see [Create a Deployment on page 11](#) for instructions).
- 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.
- On the Targets tab, specify one or more targets for this deployment.

8. Save the deployment (click **Save** in the lower right corner).
9. Run the workflow using this deployment (see [Run Your Workflow on page 12](#) for instructions).

The workflow will complete and report “Success” on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the “Failure” state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following JBoss AS 7 provisioning scenarios in your environment using the [Provision Red Hat JBoss StandAlone](#) workflow:

Scenario 1: Install Red Hat JBoss EAP

Specify values for the following parameters to install the Red Hat JBoss Enterprise Application Platform (EAP) and start a single, default profile application server.

Step Name	Parameter Name	Example Value
JBoss Input Parameter Mapping on page 51	JBoss User	jboss
JBoss Validate Stand Alone Parameters on page 52	Admin Password	adminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 78 .
	Admin User	admin
	Install Dir	/opt/jboss/jboss5eap2
	JBoss Binary Archive	/opt/jboss/jboss-eap-5.1.1.zip
	Java Binary Archive	/opt/jboss/jdk-6u29-linux-x64.bin
	JBoss Type	EAP
	Web Service Password	mypwd
	Web Service URL	https://mycomputername:4433/dma
	Web Service User	myusername

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Provision Red Hat JBoss StandAlone on page 44](#)).

Scenario 2: Install Red Hat JBoss EWP

Specify values for the following parameters to install the Red Hat JBoss Enterprise Web Platform (EAP) and start a single, default profile application server.

Step Name	Parameter Name	Example Value
JBoss Input Parameter Mapping on page 51	JBoss User	jboss
JBoss Validate Stand Alone Parameters on page 52	Admin Password	adminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 78 .
	Admin User	admin
	Install Dir	c:\jboss\jboss5ewp
	JBoss Binary Archive	c:\jboss\jboss-ewp-5.1.1.zip
	Java Binary Archive	c:\jboss\jdk-6u29-win-x64.bin
	JBoss Type	EWP
	Web Service Password	mypwd
	Web Service URL	https://mycomputername:4433/dma
	Web Service User	myusername

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Provision Red Hat JBoss StandAlone on page 44](#)).

Provision Open Source JBoss 7 StandAlone Mode

Use this workflow to install the open source JBoss Application Server 7 Community version (JBoss AS 7) and start a single, default profile application server.

The workflow performs checks to determine whether the JBoss and Java binaries exist on the target server. If they do not, the workflow downloads them from the SA software repository.

The workflow also performs validation checks at the operating system level, including file system space checks and Java version level checks.

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

Topic	Information Included
Prerequisites for this Workflow on next page	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on page 36	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 39	Instructions for running this workflow in your environment
Sample Scenario on page 41	Examples of typical parameter values for this workflow

The process of deploying and running this workflow is the same for all scenarios, but the parameters required will differ depending on the specific scenario that you are implementing.

The workflow provides default values for most parameters. These default values are usually sufficient for a typical provisioning scenario. 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 Open Source JBoss 7 StandAlone Mode on page 46](#).

Note: To view detailed information about the steps included in this workflow, see the [Steps in this Workflow](#).

Prerequisites for this Workflow

The following prerequisites must be satisfied before you can run the [Provision Open Source JBoss 7 StandAlone Mode](#) workflow:

1. The workflow requires unchallenged `sudo` access to a user (typically root) who can access all required files and directories.
2. The workflow requires the Java Development Kit (JDK) version 1.6 update 24.
3. Adequate disk space must be available to install the JBoss and Java binaries.

For information about prerequisites for JBoss AS 7, refer to the [JBoss Product Documentation on page 77](#).

How this Workflow Works

This topic contains the following information about the [Provision Open Source JBoss 7 StandAlone Mode](#) workflow:

Overview

Use this workflow to install the open source JBoss Application Server 7 Community version (JBoss AS 7) and start a single, default profile application server.

The workflow performs checks to determine whether the JBoss and Java binaries exist on the target server. If they do not, the workflow downloads them from the SA software repository.

The workflow also performs validation checks at the operating system level, including file system space checks and Java version level checks.

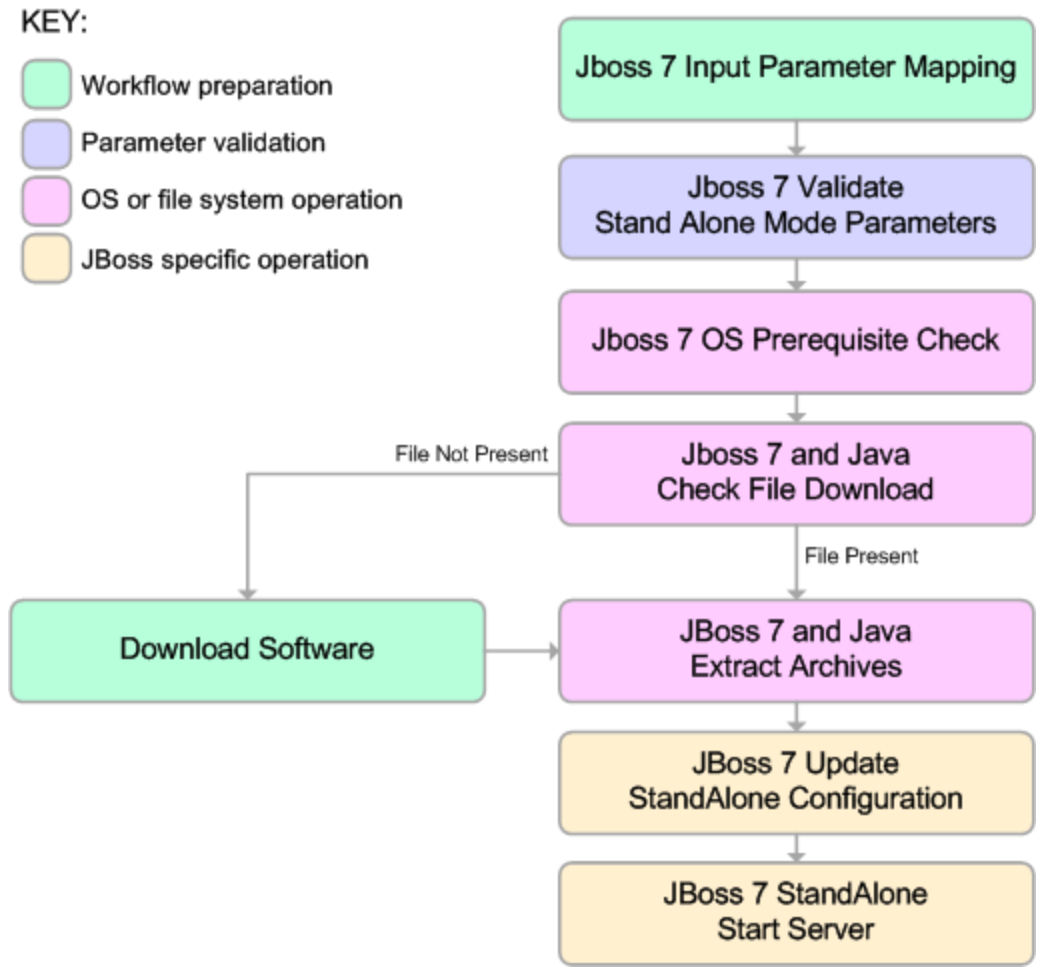
Validation Checks Performed

The workflow checks the following things prior to extracting the binaries. If any of these checks fails, the workflow fails.

1. All required parameters have values. If any required parameter does not have a value—either a value that you specify or a default value—the workflow fails.
2. All required libraries are present (see [Prerequisites for this Workflow on previous page](#)).
3. Sufficient disk space is available to extract the binary files from the compressed archive.
4. Sufficient disk space is available to install JBoss and Java.

Steps Executed

The [Provision Open Source JBoss 7 StandAlone Mode](#) 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.



Process Flow

This workflow performs the following tasks:

1. Creates the call wrapper and determines the target server platform type.
2. Validates the parameters needed to install JBoss and Java and create a stand-alone profile (see the [validation checks](#) performed).
3. Checks the following:
 - a. File system space requirements where JBoss and Java will be installed.
 - b. Temporary space requirements where the compressed software will be extracted before it is installed.
4. Determines whether the JBoss and Java binary archives are present on the target server. If either archive is not present, the workflow downloads it from the SA software repository.
5. Extracts the JBoss and Java binary archives to the specified directories.
6. Creates a default profile for a stand-alone application server.
7. Starts the new stand-alone JBoss application server.
8. Cleans up any files that were downloaded.

How to Run this Workflow

This topic explains how to customize and run the [Provision Open Source JBoss 7 StandAlone Mode](#) workflow in your environment.

Note: Prior to running this workflow, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

Tip: To learn the basic steps required to deploy and run any workflow, see the [Quick Start Tutorial on page 9](#).

To customize and run the Provision Open Source JBoss StandAlone Mode workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 10](#)).
2. Determine the values that you will specify for the following parameter. These are the parameters that are visible in the deployment by default.

Step Name	Parameter Name	Default Value	Description
JBoss 7: Validate Stand Alone Mode Parameters on page 68	Install Dir	UNIX: /opt/jboss Windows: c:\jboss	Fully qualified path where the JBoss and Java binaries will be uncompressed..
	JBoss Binary Archive	no default	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.
	Java Binary Archive	no default	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.
	JBoss User	root	The user who will install and run JBoss. This user must have write permission on the install directory.

See [Parameters for Provision Open Source JBoss 7 StandAlone Mode on page 46](#) 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 (see [How to Expose](#)

[Additional Workflow Parameters on page 23](#)). 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 11](#) 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.
8. Save the deployment (click **Save** in the lower right corner).
9. Run the workflow using this deployment (see [Run Your Workflow on page 12](#) for instructions).

The workflow will complete and report “Success” on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the “Failure” state.

Sample Scenario

This topic shows you how to use various parameters to achieve the following JBoss AS 7 provisioning scenario in your environment using the [Provision Open Source JBoss 7 StandAlone Mode](#) workflow:

Install JBoss Application Server 7 Community version

Specify values for the following parameters to install JBoss AS 7 and start a single, default profile application server. This is the simplest scenario, and it uses only those parameters that are visible in the deployment by default (out of the box).

Step Name	Parameter Name	Example Value
JBoss 7: Validate Stand Alone Mode Parameters on page 68	Install Dir	/opt/jboss/jboss-as7
	JBoss Binary Archive	/opt/jboss/jboss-as-7.1.1.Final.zip
	Java Binary Archive	/opt/jboss/jdk-6u29-linux-x64.bin
	JBoss User	root

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Provision Open Source JBoss 7 StandAlone Mode on page 46](#)).

Reference Information

This chapter contains the following information:

- [Parameters for Provision Red Hat JBoss StandAlone on page 44](#)
- [Parameters for Provision Open Source JBoss 7 StandAlone Mode on page 46](#)
- [Steps for Provision Red Hat JBoss StandAlone on page 49](#)
- [Steps for Provision Open Source JBoss 7 StandAlone Mode on page 50](#)
- [JBoss Product Documentation on page 77](#)
- [Using this Solution Pack With HP Server Automation on page 77](#)

Chapter 4

Parameter Information

The following topics provide detailed information about the input parameters used by the workflows in this solution pack:

- [Parameters for Provision Red Hat JBoss StandAlone on next page](#)
- [Parameters for Provision Open Source JBoss 7 StandAlone Mode on page 46](#)

Parameters for Provision Red Hat JBoss StandAlone

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 23](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned

For information about which steps use which parameters, see [Steps for Provision Red Hat JBoss StandAlone on page 49](#).

Parameters Defined in this Step: JBoss Input Parameter Mapping

Parameter Name	Default Value	Required	Description
JBoss User	root	optional	In a Unix environment, this is the user who will install and run JBoss. If a JBoss user is specified, this user must have access to write into the install directory. Currently, this parameter is not supported on Windows targets.

Additional Parameters Defined in this Step: JBoss Validate Stand Alone Parameters

Parameter Name	Default Value	Required	Description
Admin Password	no default	required	The password for the Admin User account.
Admin User	no default	required	The user who will manage the JBoss environment.
Call Wrapper	see description	required	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
Install Dir	UNIX: <code>/opt/jboss</code> Windows: <code>C:\jboss</code>	optional	Fully qualified path of the location where the Java and JBoss binaries will be uncompressed. If the Java software package is not available in this location, it will be downloaded from the software repository and placed in this location.
JBoss Binary Archive	no default	required	Fully qualified path where the compressed JBoss software package should be found on the target server. If the JBoss software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.

Additional Parameters Defined in this Step: JBoss Validate Stand Alone Parameters (continued)

Parameter Name	Default Value	Required	Description
JBoss Type	no default	required	Type of JBoss will be installed. Valid options are EAP (Enterprise Application Platform) or EWP (Enterprise Web Platform).
Java Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.
Trust SSL Certificates	no default	optional	If True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
Web Service Password	no default	required	Password for the HP DMA Discovery web service API.
Web Service URL	no default	required	URL for the HP DMA Discovery web service API.
Web Service User	no default	required	User capable of modifying the managed environment through the HP DMA Discovery web service API.

Parameters for Provision Open Source JBoss 7 StandAlone Mode

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 23](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned

For information about which steps use which parameters, see [Steps for Provision Open Source JBoss 7 StandAlone Mode on page 50](#).

Parameters Defined in this Step: JBoss 7: Validate Stand Alone Mode Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	UNIX targets: <code>sudo su - root /opt/opsware/dma/jython.sh</code> Windows targets: <code>jython</code>	optional	Command that will execute the step as a specific user.
File List	no default	optional	Comma-separated list of fully qualified files (JBoss Binary Archive, Java Binary Archive) that must either exist on the target server or be downloaded from the SA software repository.
HostName	no default	required	Fully qualified hostname or IP address of the server where JBoss will be installed.
Install Dir	UNIX: <code>/opt/jboss</code> Windows: <code>c:\jboss</code>	optional	Fully qualified path where the JBoss and Java binaries will be uncompressed..
JBoss Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
JBoss Home	no default	optional	Fully qualified path from which JBoss will run.

Parameters Defined in this Step: JBoss 7: Validate Stand Alone Mode Parameters (continued)

Parameter Name	Default Value	Required	Description
JBoss User	root	optional	The user who will install and run JBoss. This user must have write permission on the install directory.
Java Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
Java Home	no default	optional	Fully qualified path from which Java will run.

Chapter 5

Step Information

The following topics provide detailed information about the steps used by the workflows in this solution pack:

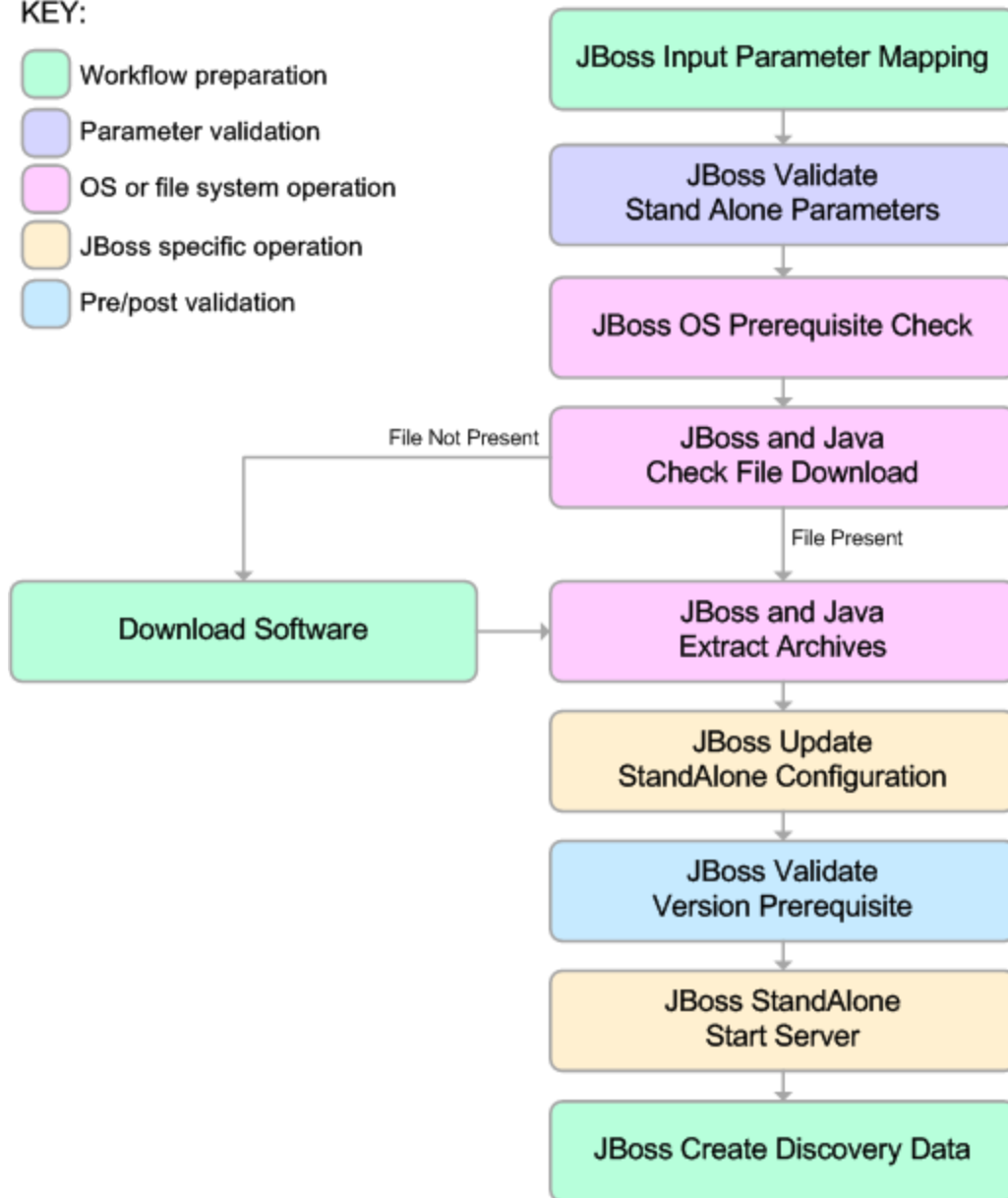
- [Steps for Provision Red Hat JBoss StandAlone on next page](#)
- [Steps for Provision Open Source JBoss 7 StandAlone Mode on page 50](#)

Steps for Provision Red Hat JBoss StandAlone

The [Provision Red Hat JBoss StandAlone](#) 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:

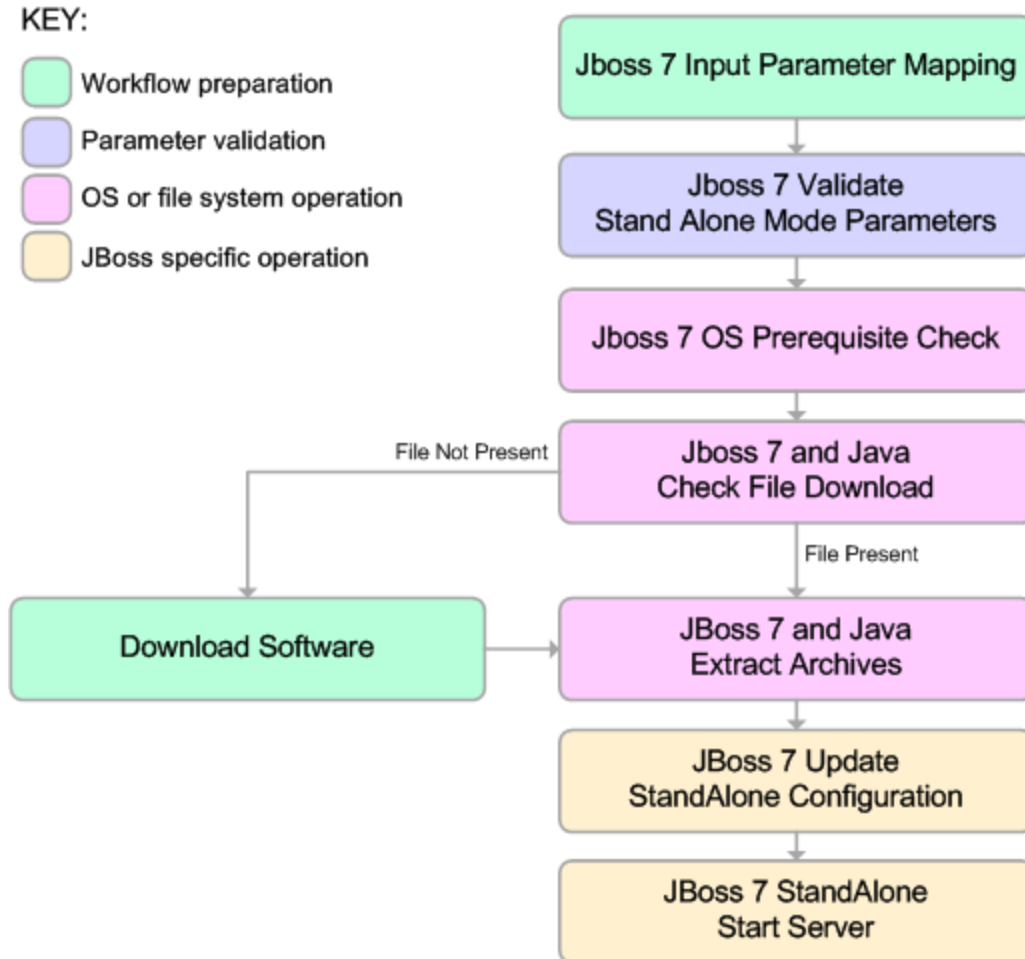
- Workflow preparation
- Parameter validation
- OS or file system operation
- JBoss specific operation
- Pre/post validation



For parameter descriptions and defaults, see [Parameters for Provision Red Hat JBoss StandAlone on page 44](#).

Steps for Provision Open Source JBoss 7 StandAlone Mode

The [Provision Open Source JBoss 7 StandAlone Mode](#) 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.



For parameter descriptions and defaults, see [Parameters for Provision Open Source JBoss 7 StandAlone Mode on page 46](#).

JBoss Input Parameter Mapping

Purpose

This step sets the Call Wrapper to facilitate the execution of subsequent steps in the workflow. It also defines the No Value parameter, which is used to hide parameters in subsequent steps.

Input Parameters

Parameter Name	Default Value	Required	Description
JBoss User	root	optional	In a Unix environment, this is the user who will install and run JBoss. If a JBoss user is specified, this user must have access to write into the install directory. Currently, this parameter is not supported on Windows targets.

Output Parameters

Parameter Name	Description
Call Wrapper	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
JBoss User	In a Unix environment, this is the user who will install and run JBoss. If a JBoss user is specified, this user must have access to write into the install directory. Currently, this parameter is not supported on Windows targets.
No Value	Special parameter used internally to to hide unused parameters in later steps.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Red Hat JBoss StandAlone on page 24](#)

JBoss Validate Stand Alone Parameters

Purpose

This step gathers the parameters required to install Red Hat JBoss Enterprise Application Platform (EAP) and/or Enterprise Web Platform (EWP) version 5.1.1 in stand-alone mode using a default profile.

Input Parameters

Parameter Name	Default Value	Required	Description
Admin Password	no default	required	The password for the Admin User account.
Admin User	no default	required	The user who will manage the JBoss environment.
Call Wrapper	see description	required	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
HostName	no default	required	Fully qualified hostname or IP address of the server where JBoss will be installed.
Install Dir	UNIX: <code>/opt/jboss</code> Windows: <code>C:\jboss</code>	optional	Fully qualified path of the location where the Java and JBoss binaries will be uncompressed. If the Java software package is not available in this location, it will be downloaded from the software repository and placed in this location.
JBoss Binary Archive	no default	required	Fully qualified path where the compressed JBoss software package should be found on the target server. If the JBoss software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.
JBoss Type	no default	required	Type of JBoss will be installed. Valid options are EAP (Enterprise Application Platform) or EWP (Enterprise Web Platform).
JBoss User	root	optional	In a Unix environment, this is the user who will install and run JBoss. If a JBoss user is specified, this user must have access to write into the install directory. Currently, this parameter is not supported on Windows targets.

Parameter Name	Default Value	Required	Description
Java Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.
Trust SSL Certificates	no default	optional	If True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
Web Service Password	no default	required	Password for the HP DMA Discovery web service API.
Web Service URL	no default	required	URL for the HP DMA Discovery web service API.
Web Service User	no default	required	User capable of modifying the managed environment through the HP DMA Discovery web service API.

Output Parameters

Parameter Name	Description
Admin Password	The password for the Admin User account.
Admin User	The user who will manage the JBoss environment.
Call Wrapper	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
File List	Comma-separated list of fully qualified files (JBoss Binary Archive, Java Binary Archive) that must either exist on the target server or be downloaded from the SA software repository.
HostName	Fully qualified hostname or IP address of the server where JBoss will be installed.
Install Dir	Fully qualified path of the location where the Java and JBoss binaries will be uncompressed. If the Java software package is not available in this location, it will be downloaded from the software repository and placed in this location.

Parameter Name	Description
JBoss Binary Archive	Fully qualified path where the compressed JBoss software package should be found on the target server. If the JBoss software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
JBoss Dir List	List of supported directory names.
JBoss Home	Fully qualified path to the directory from which JBoss will run.
JBoss Max Version	The most current JBoss version supported for this type of install (EAP, WEB, or OPEN).
JBoss Min Version	The oldest JBoss version supported for this type of install (EAP, WEB, or OPEN).
JBoss Sub Dir	The sub directory under JBoss Home where JBoss will run (<code>jboss-as</code> for an EAP install, <code>jboss-as-web</code> for an EWP install).
JBoss Type	Type of JBoss will be installed. Valid options are EAP (Enterprise Application Platform) or EWP (Enterprise Web Platform).
JBoss User	In a Unix environment, this is the user who will install and run JBoss. If a JBoss user is specified, this user must have access to write into the install directory. Currently, this parameter is not supported on Windows targets.
Java Binary Archive	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
Java Cert Version	The Java version for which this type of install (EAP or EWP) was certified. This value is typically higher than the Java Min Version.
Java Home	Fully qualified path to the directory from which Java will run.
Java Min Version	The oldest supported version of Java for this type (EAP or EWP) of JBoss installation.
Trust SSL Certificates	If True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
Web Service Password	Password for the HP DMA Discovery web service API.
Web Service URL	URL for the HP DMA Discovery web service API.

Parameter Name	Description
Web Service User	User capable of modifying the managed environment through the HP DMA Discovery web service API.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Red Hat JBoss StandAlone on page 24](#)

JBoss OS Prerequisite Check

Purpose

This step determines whether the following things are true:

- The installation directory is empty.
- The file system has sufficient available space.
- The target server operating system is a supported platform.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	see description	required	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
Install Dir	UNIX: <code>/opt/jboss</code> Windows: <code>C:\jboss</code>	optional	Fully qualified path of the location where the Java and JBoss binaries will be uncompressed. If the Java software package is not available in this location, it will be downloaded from the software repository and placed in this location.
Java Home	no default	required	Fully qualified path to the directory from which Java will run.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Red Hat JBoss StandAlone on page 24](#)

JBoss and Java Check File Download

Purpose

This step checks a list of files to determine which files already exist on the target server and which need to be downloaded from the SA software repository.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	see description	required	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
File List	no default	required	Comma-separated list of fully qualified files (JBoss Binary Archive, Java Binary Archive) that must either exist on the target server or be downloaded from the SA software repository.

Output Parameters

Parameter Name	Description
Download List	Comma-separated list of files in the File List that were not found on the target server. These files must be downloaded from the SA software repository in a subsequent step.
File List	Comma-separated list of files (with fully qualified paths) that were checked.
Present List	Comma-separated list of the files in the File List that were found on the target server.
Target Directory	Directory name of the first file in the File List that was not found.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Red Hat JBoss StandAlone on page 24](#)

JBoss and Java Extract Archives

Purpose

This extracts the contents of the JBoss Binary Archive and the Java Binary Archive into the specified installation directory.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	see description	required	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
Install Dir	UNIX: <code>/opt/jboss</code> Windows: <code>C:\jboss</code>	optional	Fully qualified path of the location where the Java and JBoss binaries will be uncompressed. If the Java software package is not available in this location, it will be downloaded from the software repository and placed in this location.
JBoss Binary Archive	no default	required	Fully qualified path where the compressed JBoss software package should be found on the target server. If the JBoss software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.
JBoss User	root	optional	In a Unix environment, this is the user who will install and run JBoss. If a JBoss user is specified, this user must have access to write into the install directory. Currently, this parameter is not supported on Windows targets.
Java Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.
Java Min Version	no default	required	The oldest supported version of Java for this type (EAP or EWP) of JBoss installation.

Output Parameters

Parameter Name	Description
JBoss Home	Fully qualified path to the directory from which JBoss will run.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Red Hat JBoss StandAlone on page 24](#)

JBoss Update StandAlone Configuration

Purpose

This step prepares the `run.conf` file and security related properties files in order to start the application server securely in standalone mode.

Input Parameters

Parameter Name	Default Value	Required	Description
Admin Password	no default	required	The password for the Admin User account.
Admin User	no default	required	The user who will manage the JBoss environment.
Call Wrapper	see description	required	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
HostName	no default	required	Fully qualified hostname or IP address of the server where JBoss will be installed.
JBoss Binary Archive	no default	required	Fully qualified path where the compressed JBoss software package should be found on the target server. If the JBoss software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
JBoss Home	no default	optional	Fully qualified path to the directory from which JBoss will run.
JBoss Sub Dir	no default	required	The sub directory under JBoss Home where JBoss will run (<code>jboss-as</code> for an EAP install, <code>jboss-as-web</code> for an EWP install).
JBoss User	root	optional	In a Unix environment, this is the user who will install and run JBoss. If a JBoss user is specified, this user must have access to write into the install directory. Currently, this parameter is not supported on Windows targets.
Java Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
Java Home	no default	required	Fully qualified path to the directory from which Java will run.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Red Hat JBoss StandAlone on page 24](#)

JBoss Validate Version Prerequisite

Purpose

This step validates that the JBoss and Java software that was installed are the correct versions.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	see description	required	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
JBoss Home	no default	optional	Fully qualified path to the directory from which JBoss will run.
JBoss Min Version	no default	required	The oldest JBoss version supported for this type of install (EAP, WEB, or OPEN).
JBoss Sub Dir	no default	required	The sub directory under JBoss Home where JBoss will run (<code>jboss-as</code> for an EAP install, <code>jboss-as-web</code> for an EWP install).
Java Home	no default	required	Fully qualified path to the directory from which Java will run.
Java Min Version	no default	required	The oldest supported version of Java for this type (EAP or EWP) of JBoss installation.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Red Hat JBoss StandAlone on page 24](#)

JBoss StandAlone Start Server

Purpose

This step starts the stand-alone application server.

Input Parameters

Parameter Name	Default Value	Required	Description
Admin Password	no default	required	The password for the Admin User account.
Admin User	no default	required	The user who will manage the JBoss environment.
Call Wrapper	see description	required	Command that will execute the step as a specific user (by default, <code>sudo su - root /opt/opsware/dma/jython.sh</code> for UNIX targets and <code>jython</code> for Windows targets).
HostName	no default	required	Fully qualified hostname or IP address of the server where JBoss will be installed.
JBoss Home	no default	optional	Fully qualified path to the directory from which JBoss will run.
JBoss Sub Dir	no default	required	The sub directory under JBoss Home where JBoss will run (<code>jboss-as</code> for an EAP install, <code>jboss-as-web</code> for an EWP install).
JBoss User	root	optional	In a Unix environment, this is the user who will install and run JBoss. If a JBoss user is specified, this user must have access to write into the install directory. Currently, this parameter is not supported on Windows targets.
Java Home	no default	required	Fully qualified path to the directory from which Java will run.

Output Parameters

Parameter Name	Description
HTTP Port	HTTP port for the stand-alone application server.
RMI Id	Identifier used to determine whether default ports are used.
RMI Port	Remote Method Invocation (RMI) port for the application server.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Red Hat JBoss StandAlone on page 24](#)

JBoss: Create Discovery Data

Purpose

This step records in HP DMA metadata fields information that was learned in the process of installing and starting the application server.

Input Parameters

Parameter Name	Default Value	Required	Description
Admin Password	no default	required	The password for the Admin User account.
Admin User	no default	required	The user who will manage the JBoss environment.
HTTP Port	no default	optional	HTTP port for the stand-alone application server.
HostName	no default	required	Fully qualified hostname or IP address of the server where JBoss will be installed.
JBoss Home	no default	optional	Fully qualified path to the directory from which JBoss will run.
Java Home	no default	required	Fully qualified path to the directory from which Java will run.
RMI Id	no default	optional	Identifier used to determine whether default ports are used.
RMI Port	no default	optional	Remote Method Invocation (RMI) port for the application server.
Trust SSL Certificates	no default	optional	If True, the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web service.
Web Service Password	no default	required	Password for the HP DMA Discovery web service API.
Web Service URL	no default	required	URL for the HP DMA Discovery web service API.
Web Service User	no default	required	User capable of modifying the managed environment through the HP DMA Discovery web service API.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Red Hat JBoss StandAlone on page 24](#)

JBoss 7 Input Parameter Mapping

Purpose

This step creates the Call Wrapper.

Input Parameters

This step has no input parameters.

Output Parameters

Parameter Name	Description
Call Wrapper	Command that will execute the step as a specific user.
No Value	Special parameter used internally to to hide unused parameters in later steps.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Open Source JBoss 7 StandAlone Mode on page 34](#)

JBoss 7: Validate Stand Alone Mode Parameters

Purpose

This step gathers the parameters required to install JBoss Application Server 7 Community version in stand-alone mode using a default profile.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	UNIX targets: <code>sudo su - root /opt/opsware/dma/jython.sh</code> Windows targets: <code>jython</code>	optional	Command that will execute the step as a specific user.
HostName	no default	required	Fully qualified hostname or IP address of the server where JBoss will be installed.
Install Dir	UNIX: <code>/opt/jboss</code> Windows: <code>c:\jboss</code>	optional	Fully qualified path where the JBoss and Java binaries will be uncompressed..
JBoss Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
JBoss User	root	optional	The user who will install and run JBoss. This user must have write permission on the install directory.
Java Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.

Output Parameters

Parameter Name	Description
Call Wrapper	Command that will execute the step as a specific user.
File List	Comma-separated list of fully qualified files (JBoss Binary Archive, Java Binary Archive) that must either exist on the target server or be downloaded from the SA software repository.
HostName	Fully qualified hostname or IP address of the server where JBoss will be installed.
Install Dir	Fully qualified path where the JBoss and Java binaries will be uncompressed..
JBoss Binary Archive	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
JBoss Home	Fully qualified path from which JBoss will run.
JBoss User	The user who will install and run JBoss. This user must have write permission on the install directory.
Java Binary Archive	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
Java Home	Fully qualified path from which Java will run.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Open Source JBoss 7 StandAlone Mode on page 34](#)

JBoss 7: OS Prerequisite Check

Purpose

This step determines whether the following things are true:

- The installation directory is empty.
- The file system has sufficient available space.
- The target server operating system is a supported platform.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	UNIX targets: <code>sudo su - root /opt/opsware/dma/jython.sh</code> Windows targets: <code>jython</code>	required	Command that will execute the step as a specific user.
JBoss Home	no default	required	Fully qualified path from which JBoss will run.
Java Home	no default	required	Fully qualified path from which Java will run.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Open Source JBoss 7 StandAlone Mode on page 34](#)

JBoss 7 JBoss and Java Check File Download

Purpose

This step checks a list of files to determine which files already exist on the target server and which need to be downloaded from the SA software repository.

Input Parameters

Parameter Name	Default Value	Required	Description
File List	no default	required	Comma-separated list of fully qualified files (JBoss Binary Archive, Java Binary Archive) that must either exist on the target server or be downloaded from the SA software repository.

Output Parameters

Parameter Name	Description
Download List	Comma-separated list of files NOT found on the target server. These files need to be downloaded in a subsequent step.
File List	Comma-separated list of fully qualified files (JBoss Binary Archive, Java Binary Archive) that must either exist on the target server or be downloaded from the SA software repository.
Present List	Comma-separated list of files that WERE found on the target server. These files do NOT need to be downloaded.
Target Directory	Directory name of the first file that was NOT found.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Open Source JBoss 7 StandAlone Mode on page 34](#)

JBoss 7 JBoss and Java Extract Archives

Purpose

This extracts the contents of the JBoss Binary Archive and the Java Binary Archive into the specified installation directory.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	UNIX targets: <code>sudo su - root /opt/opsware/dma/jython.sh</code> Windows targets: <code>jython</code>	required	Command that will execute the step as a specific user.
Install Dir	UNIX: <code>/opt/jboss</code> Windows: <code>c:\jboss</code>	optional	Fully qualified path where the JBoss and Java binaries will be uncompressed..
JBoss Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.
JBoss User	root	optional	The user who will install and run JBoss. This user must have write permission on the install directory.
Java Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SASoftware repository and placed in this location.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Open Source JBoss 7 StandAlone Mode on page 34](#)

JBoss 7 Update JBoss StandAlone configuration

Purpose

This step prepares the `run.conf` file and security related properties files in order to start the application server securely in standalone mode.

Input Parameters

Parameter Name	Default Value	Required	Description
HostName	no default	required	Fully qualified hostname or IP address of the server where JBoss will be installed.
JBoss Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
JBoss Home	no default	optional	Fully qualified path from which JBoss will run.
JBoss User	root	optional	The user who will install and run JBoss. This user must have write permission on the install directory.
Java Binary Archive	no default	required	Fully qualified path where the compressed Java software package should be found on the target server. If the Java software package is not available in this location, it will be downloaded from the SAsoftware repository and placed in this location.
Java Home	no default	optional	Fully qualified path from which Java will run.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Open Source JBoss 7 StandAlone Mode on page 34](#)

JBoss StandAlone Start Server

Purpose

This step starts the stand-alone application server.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	UNIX targets: <code>sudo su - root /opt/opsware/dma/jython.sh</code> Windows targets: <code>jython</code>	required	Command that will execute the step as a specific user.
JBoss Home	no default	optional	Fully qualified path from which JBoss will run.
JBoss User	root	optional	The user who will install and run JBoss. This user must have write permission on the install directory.
Java Home	no default	optional	Fully qualified path from which Java will run.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Provision Open Source JBoss 7 StandAlone Mode on page 34](#)

Chapter 6

Other Reference Information

The following topics provide additional information pertinent to the workflows in this solution pack:

- [JBoss Product Documentation on next page](#)
- [Using this Solution Pack With HP Server Automation on next page](#)

JBoss Product Documentation

The following JBoss product documentation is available online:

Red Hat JBoss Enterprise Application Platform (EAP) and/or Enterprise Web Platform (EWP) version 5.1.1

- Product Documentation Home: <http://docs.redhat.com/docs/en-US/index.html>
- Hardware and Software Requirements: <http://www.jboss.com/products/platforms/application/supportedconfigurations/>

JBoss Application Server 7 Community version

- Product Documentation Home: <https://docs.jboss.org/author/display/AS71/Documentation>
- Hardware and Software Requirements: <https://docs.jboss.org/author/display/AS71/Getting+Started+Guide>

Using this Solution Pack With HP Server Automation

HP Database and Middleware Automation (HP DMA) version 1.00 is compatible with HP Server Automation version 9.02 (and later 9.0x versions).

For information about running HP DMA workflows from HP Server Automation versions prior to 9.10, refer to the following documents:

- *HP Server Automation Application Deployment User Guide* (version 9.02 and later 9.0x versions)
- *HP Database and Middleware Automation User Guide* (version 1.00)

HP Database and Middleware Automation version 9.10 is compatible with HP Server Automation version 9.10 (and later).

For information about running HP Database and Middleware Automation workflows from HP Server Automation version 9.10 (and later), refer to the following documents:

- *User Guide: Application Deployment Manager*
- *User Guide: Database and Middleware Automation User Guide*

These guides are included in the HP Server Automation documentation library (version 9.10 and later).

Chapter 7

Tips and Best Practices

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

[Using a Policy to Specify Parameter Values below](#)

Using 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:

- Passwords are obfuscated (not displayed in clear text).
- The policy can be used in any deployment.
- It is faster and less error-prone than specifying parameter values manually.

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](#).

If you are using HP Server Automation, see the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

If you are using HP DMA 1.00, see "Policies" in the *HP Database and Middleware Automation User Guide* for more information.

Create a Policy

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

To create a policy that provides parameter values:

1. In the HP DMA web UI, go to Automation > Policies.
2. Click **New Policy**.
3. In the **Name** box, specify the name of the policy
4. For each parameter value that you want to provide using this policy, perform the following actions on the Attributes tab:
 - a. From the drop-down list, select the type of attribute:
 - A Text attribute contains simple text that users can view while deploying and running workflows.

- A List attribute contains a comma-delimited list of values (or a large amount of text not suitable for a Text attribute).
 - A Password attribute contains simple text, but it is obfuscated 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.

Note: Extracted policies only use Text type attributes. Therefore, passwords are not obfuscated when you specify them in an extracted policy. You can, however, delete an automatically extracted attribute and then add a new one of type Password.

6. *Optional:* Add any new attributes that you want to use.
7. *Optional:* On the Roles tab, select the Read box for any users or user groups that you want to be able to use this policy to provide parameter values in a Deployment. Select the Write box for any users or groups that you want to be able to modify this Policy (add or remove attributes).
8. Click **Save**.

Reference the Policy in the Deployment

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

To reference policy attributes in a deployment:

1. Create or access the deployment.

See “Deployments” in the *User Guide: Database and Middleware Automation* for details. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

2. On the Parameters tab, perform the following steps for each parameter whose value you want to provide by referencing a policy attribute:

- a. In the text box to the right of the parameter name, type the first few characters of the policy name.

A drop-down list of policy attributes appears.

- b. From the drop-down list, select the attribute that you want to reference.

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

Chapter 8

Troubleshooting

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

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

For additional information, refer to the “Troubleshooting” chapter in the *HP Server Automation User Guide: Database and Middleware Automation*.

If you are using HP Database and Middleware Automation version 1.00, see the *HP Database and Middleware Automation Installation Guide*.

Target Type

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

User Permissions and Related Requirements

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

Note: The following information pertains only to HP DMA 1.00:

Roles can be defined in one of two ways: native or LDAP groups.

- Native roles define groups of HP DMA users in the repository.
- LDAP groups are retrieved from the LDAP server configured in the Setup > Expert Engine area. No user information is stored in the repository for LDAP groups. This allows you to use your corporate directory for defining users and their permissions making security audits easier.

Roles are assigned on the Roles tab of the Setup page. See “Roles” in the *HP Database and Middleware Automation User Guide* (version 1.00) for more information.

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

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

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

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

Note: In HP Server Automation, roles and permissions work differently. Both roles and permissions are assigned by the SA administrator. See the HP Server Automation *Administration Guide* and the *User Guide: Database and Middleware Automation* for more information. Both guides are included in the HP Server Automation documentation library (SA version 9.10 and later).

Discovery in HP Server Automation

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

In HP DMA version 1.00, discovery is automatically activated when an agent is started on a target machine.

In HP Server Automation, you must explicitly initiate the process of discovery—it is not automatic. Refer to the *User Guide: Database and Middleware Automation* for instructions. This guide is included in the SA documentation library (version 9.10 and later).

Glossary

B

bridged execution

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

C

cross-platform

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

D

deployment

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

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

destination

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

DESTINATION

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

I

input parameters

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

M

mapping

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

then become visible on the Deployment page.

O

Oracle Data Pump

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

P

parameters

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

R

raw devices

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

Recovery Manager (RMAN)

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

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

S

source

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

SOURCE

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source database

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

steps

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

T

target instance

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

W

workflow

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

business process by building on existing best practices and processes.

workflow editor

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