

HP Operations Smart Plug-in for JBoss Application Server

for HP Operations Manager for Linux

Software Version: 7.01

Installation and Configuration Guide

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Contents

1	Introduction to HP Operations Smart Plug-in for JBoss Application Server	11
	Components of the JBoss AS SPI	11
	Policies	12
	Tools	12
	Graphs	12
	Functions of the JBoss AS SPI	12
	Server Performance and Logs	12
	Display Information	13
	Graphs Data with HP Performance Manager	14
2	Installing the JBoss AS SPI	15
	Installation Packages	17
	Linux	17
	SPI Package	17
	Graphing Package	17
	HP-UX	18
	SPI Package	18
	Graphing Package	18
	Installation Environments	18
	Standard Installation of SPI Components on the HPOM Server	18
	Standalone HP Performance Manager	18
	Standard Installation in the HPOM Cluster Environment for HP-UX	19
	Installation Prerequisites	19
	Hardware Requirements	19
	Software Requirements	19
	Installing the JBoss AS SPI	20
	On a Local Management Server	20
	Mounting the DVD on HP-UX	20
	Installing the JBoss AS SPI	20
	Installing the SPI through Graphical User Interface	20
	Installing the SPI through Command Line Interface	22
	In the HPOM Cluster Environment on HP-UX	23
	Installing the JBoss AS SPI on the Cluster-Aware Management Server	24
	Verifying the Installation	24
3	Configuring the JBoss AS SPI	25
	Prerequisite	25
	Assign Operator Responsibilities (Optional)	25
	Assign Tools to the Operator	26
	Configuring the JBoss AS SPI	28

Add Nodes to the JBoss Node Group	28
Assign Categories to the Managed Node	30
Deploy Instrumentation on the Managed Node	31
Launch Discover Tool	32
Verify the Discovery Process	34
Assign Policies to the Managed Node	35
Deploy the JBoss AS SPI Policies	35
Launch Configure Tool	36
JBoss AS SPI in High Availability Environments	38
Configuration Prerequisites	38
Configuring the JBoss AS SPI for High Availability Environments	38
Create the JBoss AS SPI monitoring configuration file	38
Create the clustered application configuration file	39
Configure the JBoss AS SPI	40
4 Using Tools	41
SPI Admin Tools Group	41
Discover or Configure JBSSPI	42
Self-Healing Info	43
Start Monitoring	43
Stop Monitoring	43
Start Tracing	43
Stop Tracing	44
Verify	44
View Error Files	44
JBoss Server Admin Tools Group	44
Start JBoss Server	45
JBoss Server Status	45
Stop JBoss Server	45
View JBoss Logs	45
Launching Tools	46
Launching Discover or Configure JBSSPI Tool	46
Launching All Tools	46
5 Customizing the JBoss AS SPI Policies	47
Basic Policy Customizations	48
Modifying Monitor Policies	48
Advanced Policy Customizations	49
Choosing Metrics to Customize	49
Using the JBoss AS SPI Collector/Analyzer Command with Parameters	50
JBoss Application Server Command Parameters	50
Changing the Collection Interval for All Monitored Metrics	52
Changing the Collection Interval for Selected Metrics	52
Policy Variables	53
Monitoring a JBoss Server on Unsupported Platforms	54
Requirements for Monitoring Remote Nodes	54
Remote Monitoring	55
Configuring Remote Node Monitoring	55

Configuration Prerequisites	56
Configure the Remote JBoss Node	57
Configuring Remote Logfile Monitoring (Optional)	58
Configure the Logfile Policy for Remote Logfiles	58
Monitoring JBSSPI logs	59
Limitations of Remote Monitoring	59
6 Integrating the JBoss AS SPI with HP Graphing Solutions	61
Using Graphs	61
JBoss AS SPI Graphs	61
Integrating with HP Performance Manager	61
Viewing Graphs that Show Alarm Conditions	62
Viewing Graphs from the HP Performance Manager Console	63
7 Troubleshooting	65
Self-Healing Info Tool	65
Logging	65
Management Server	65
Managed Nodes	66
Troubleshooting Discovery Process	67
Troubleshooting Configuration	70
Troubleshooting Collection	70
Troubleshooting Tools	71
Troubleshooting Miscellaneous	73
Overview of Error Messages	73
8 Removing the JBoss AS SPI	75
Removing the SPI through the Graphical User Interface from Linux Management Server	75
Removal of the SPI through the Command Line Interface from Linux Management Server	76
Removing the SPI components from HP-UX Management Server	78
Remove the JBoss AS SPI Software from the Management Server	78
Delete the JBoss AS SPI Message Groups	78
Removing the JBoss AS SPI in an HPOM Cluster Environment	78
A File Locations	79
HPOM Management Server File Locations	79
Managed Node File Locations	79
B The Configuration	81
Structure	81
Global Properties	81
GROUP Block	81
NODE Block	82
Server-Specific Properties	82
Property Precedence	82
The Configuration Editor	83
Discover or Configure JBSSPI - Tree	83
Discover or Configure JBSSPI - Buttons	84

Discover or Configure JBSSPI - Actions	85
Add Application Server	86
Remove Application Server/Remove ALL Servers	86
Set Configuration Settings Tab	87
View Current Configuration Tab	88
Configuration Properties	89
C Error Messages	91
WASSPI-1	92
WASSPI-2	92
WASSPI-3	93
WASSPI-4	93
WASSPI-5	94
WASSPI-6	94
WASSPI-7	95
WASSPI-8	95
WASSPI-9	96
WASSPI-10	96
WASSPI-11	97
WASSPI-12	97
WASSPI-13	98
WASSPI-14	98
WASSPI-15	99
WASSPI-16	99
WASSPI-17	100
WASSPI-18	100
WASSPI-19	101
WASSPI-20	101
WASSPI-21	101
WASSPI-23	102
WASSPI-24	102
WASSPI-26	102
WASSPI-27	103
WASSPI-28	103
WASSPI-29	103
WASSPI-30	103
WASSPI-31	104
WASSPI-32	104
WASSPI-33	104
WASSPI-34	104
WASSPI-35	105
WASSPI-36	105
WASSPI-37	105
WASSPI-38	106
WASSPI-39	106

WASSPI-40	106
WASSPI-41	107
WASSPI-42	107
WASSPI-43	107
WASSPI-201	108
WASSPI-202	108
WASSPI-203	108
WASSPI-204	109
WASSPI-205	109
WASSPI-206	109
WASSPI-207	110
WASSPI-208	110
WASSPI-209	110
WASSPI-210	111
WASSPI-211	111
WASSPI-213	111
WASSPI-214	112
WASSPI-215	112
WASSPI-216	112
WASSPI-218	113
WASSPI-219	113
WASSPI-221	113
WASSPI-222	114
WASSPI-223	114
WASSPI-224	114
WASSPI-225	115
WASSPI-226	115
WASSPI-227	115
WASSPI-228	116
WASSPI-229	116
WASSPI-230	116
WASSPI-231	117
WASSPI-232	117
WASSPI-234	117
WASSPI-235	118
WASSPI-236	118
WASSPI-237	118
WASSPI-238	119
WASSPI-241	119
WASSPI-245	119
WASSPI-248	120
WASSPI-249	120
WASSPI-254	120
Others	121

Index 123

1 Introduction to HP Operations Smart Plug-in for JBoss Application Server

This guide contains JBoss SPI information for HP Operations Manager for UNIX version 9.00 and HP Operations Manager for Linux version 9.01.

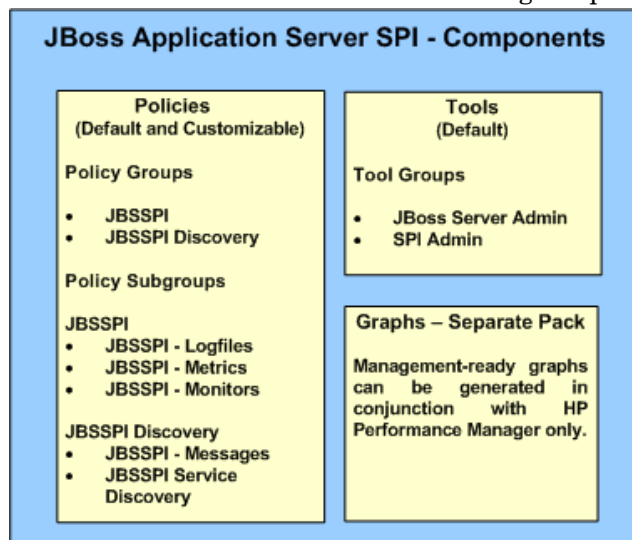
This chapter provides an overview of the basic concepts necessary to understand the HP Operations Smart Plug-in for JBoss Application Server SPI (JBoss AS SPI). The JBoss AS SPI enables you to manage the JBoss Application Servers from an HP Operations Manager (HPOM) for UNIX console. From the HPOM for UNIX console, you can monitor the availability, use, and performance of the JBoss Application Servers running on HPOM managed nodes. You can integrate the JBoss AS SPI with other HP Software products like HP Performance Manager (the product must be purchased separately) to get consolidated graphs. The graphs help you analyze trends in server usage, availability, and performance. For details on integrating the JBoss AS SPI with other HP products, see [Chapter 6, Integrating the JBoss AS SPI with HP Graphing Solutions](#). The JBoss AS SPI extends the capabilities of HPOM by adding the following monitoring capabilities to HPOM:

- Availability Monitoring
- Resource Monitoring
- Process Monitoring

For more information on HPOM, see *HP Operations Manager for UNIX Concepts Guide*.

Components of the JBoss AS SPI

The JBoss AS SPI consists of the following components.



Policies

The JBoss AS SPI consists of policies that monitor the JBoss Application Server. The policies contain settings that enable incoming data to be measured against predefined rules. These rules generate useful information in the form of messages. The messages have color-coding to indicate the severity level. You can review these messages to analyze and resolve the problem. There are several pre-defined corrective actions for specific events or threshold violations. These corrective actions can be triggered automatically or operator-initiated. When you double-click a message text, corrective actions appear within the **Instructions** tab and automatically generated metric reports appear within the **Annotations** tab in the Message Properties window. Monitoring consists of generating alarms related to critical events of the tool, and logging important performance metrics of the application server. You can create graphs using the metrics that are logged. For more information on policies, see [Customizing the JBoss AS SPI Policies](#) on page 47.

Tools

In conjunction with HPOM, the JBoss AS SPI offers centralized tools that help you monitor and manage systems using the JBoss Application Server (AS). The JBoss AS SPI tools enable you to configure the management server's connection to selected server instances on specific managed nodes. The JBoss AS SPI tools include the tools for administrating and operating the JBoss AS and the JBoss AS SPI. The JBoss AS SPI tools consists of two tool groups:

- JBoss Server Admin
- SPI Admin

For more information on tools, see [Chapter 4, Using Tools](#).

Graphs

The SPI package contains the default graphing policies provided by the SPI. Graphs are drawn from metrics that are logged in the datasources created by the SPI. The graphs help you analyze trends in server usage, availability, and performance. For details on integrating the JBoss AS SPI with HP Performance Manager to get consolidated graphs, see [Chapter 6, Integrating the JBoss AS SPI with HP Graphing Solutions](#).

Functions of the JBoss AS SPI

The JBoss AS SPI messaging and action-executing capabilities are based on the HPOM concept of policies. The settings within these policies define various conditions that might occur within the JBoss AS, and enable information to be sent back to the HPOM management server. As a result, you can address potential or existing problems proactively and avoid serious disruptions to web transaction processing.

Server Performance and Logs

The JBoss AS SPI has several server-related metrics that collect and interpret data about the following:

- Server performance

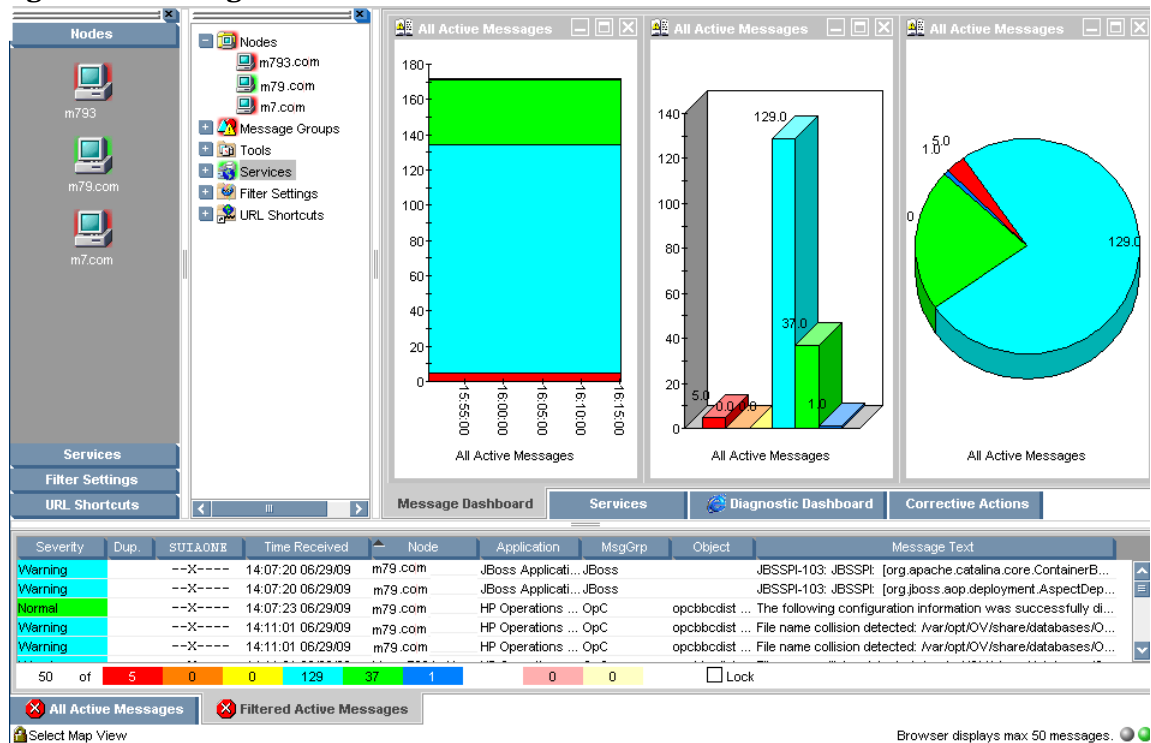
- JVM
- Thread Pools
- Transactions (JTA)
- EJBs
- Servlets
- JCA/JDBC Connections
- JMS
- JBoss AS logs

Display Information

The JBoss AS SPI policies generate messages when a threshold is exceeded. These messages can appear as:

Messages in the Message Browser – HP Operations Agent software compares the values gathered for the JBoss Application Server performance and availability against the settings in the monitor policy related to those specific areas. The agent software then forwards appropriate messages to the HPOM console. These messages appear with color-coded severity levels in the HPOM message browser. To access the message browser, select **Integrations** → **HPOM for Unix Operational UI**.

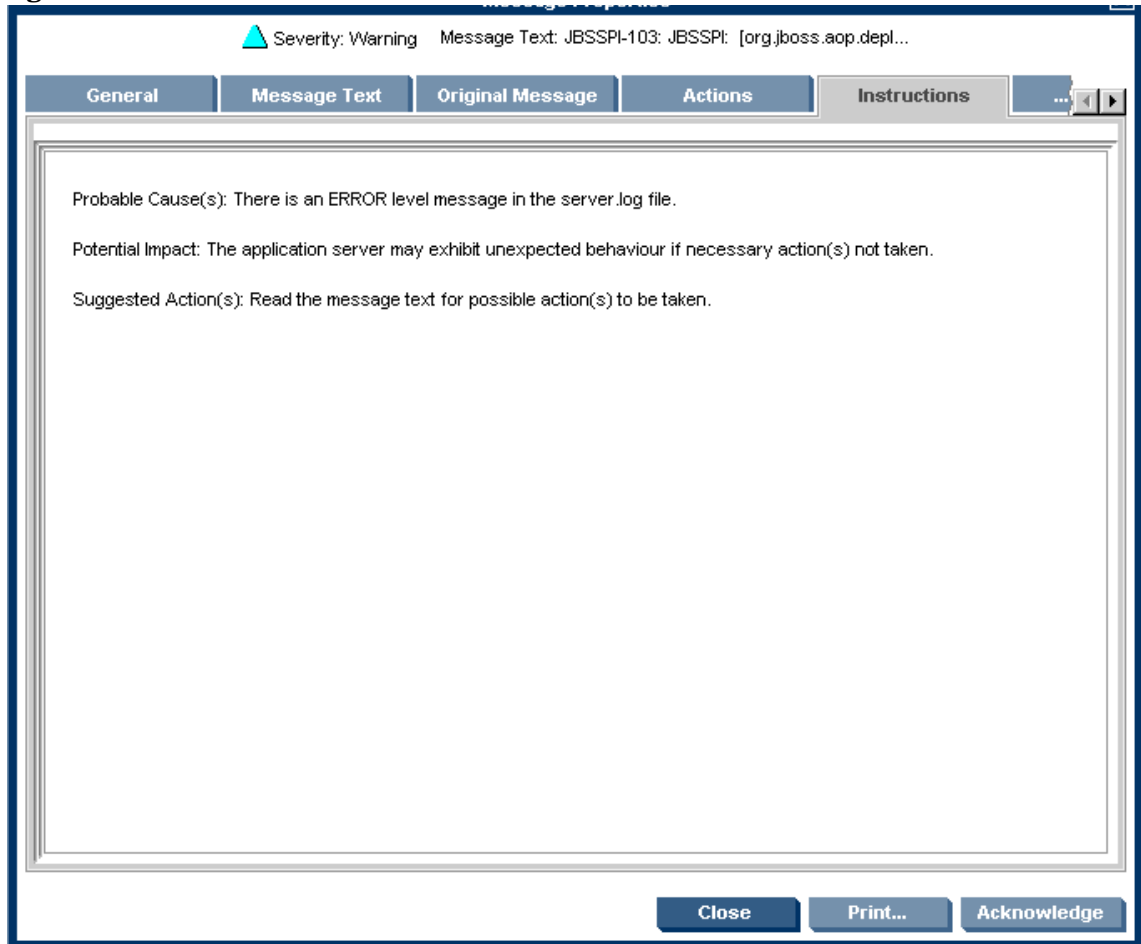
Figure 1 Message Browser



Instruction Text – Messages generated by the JBoss AS SPI programs contain instruction text to help analyze and solve problems. You can perform corrective actions preassigned to the events manually or trigger the actions automatically.

Instruction text usually appears in the Message Properties window under the **Instructions** tab. Double-click the message text in the Message Browser to view the Message Properties window. Click the **Instructions** tab. Instruction text is also available in the *HP Operations Smart Plug-in for JBoss Application Server Reference Guide*.

Figure 2 Instruction Text



Graphs Data with HP Performance Manager

You can create graphs using the metrics collected by the JBoss AS SPI. The values can then be viewed for analyzing the trend. You can integrate the JBoss AS SPI with HP Performance Manager to generate and view graphs. These graphs show the values of the metrics collected by the JBoss AS SPI.

2 Installing the JBoss AS SPI

The chapter discusses all the required prerequisites and steps for installing the JBoss AS SPI. The following flowchart summarizes the steps for installing and configuring the JBoss AS SPI.

Figure 3 Flowchart on steps for installing and configuring the SPI for HP-UX

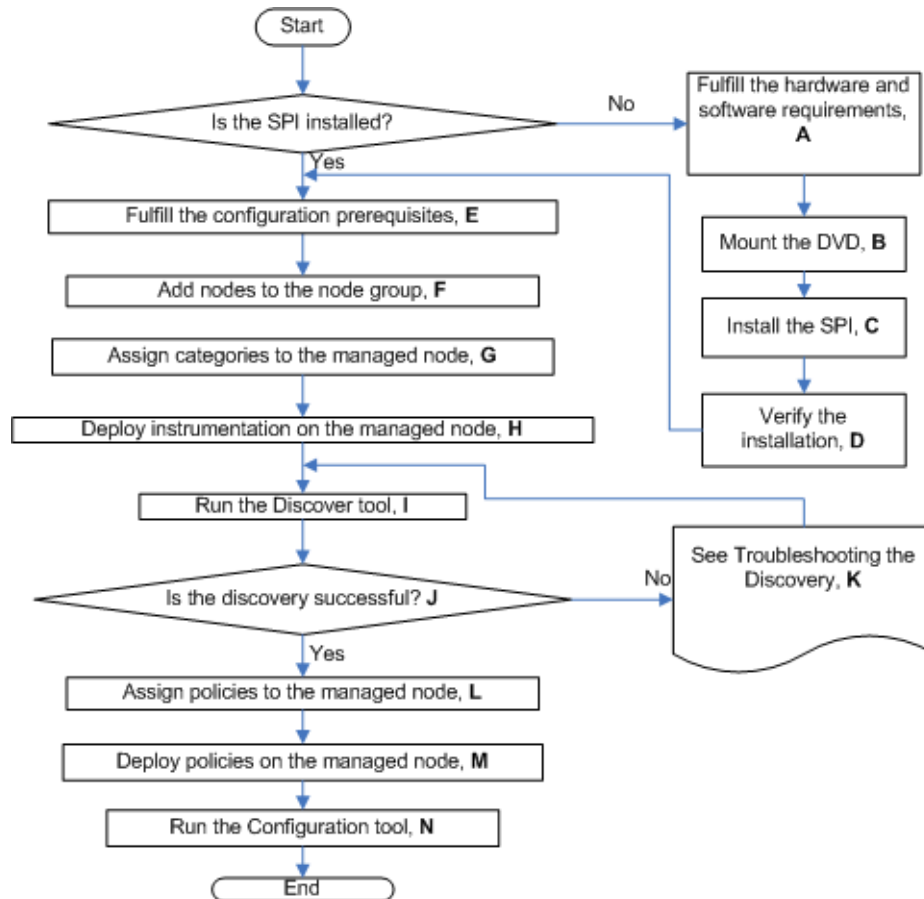


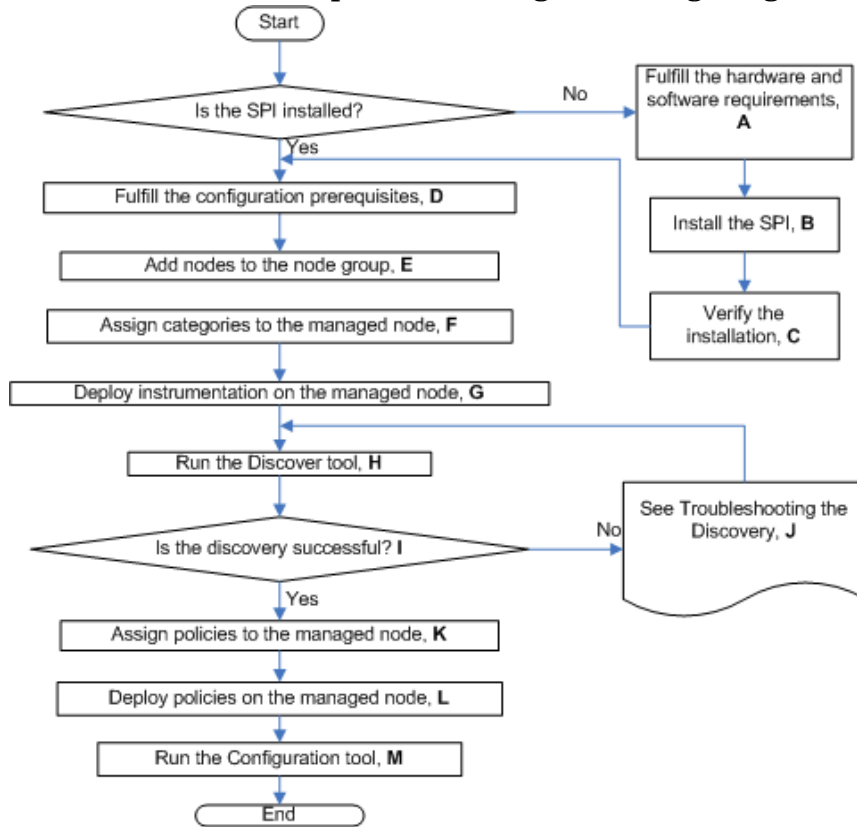
Figure 4 Click a hyperlink below to find the detailed information:

Table 1 References of the legends in the flowchart

Legend	Location
A	Installation Prerequisites on page 19
B	Mounting the DVD on HP-UX on page 20
C	Installing the JBoss AS SPI on page 20
D	Verifying the Installation on page 24

Legend	Location
E	Prerequisite on page 25
F	Add Nodes to the JBoss Node Group on page 28
G	Assign Categories to the Managed Node on page 30
H	Deploy Instrumentation on the Managed Node on page 31
I	Launch Discover Tool on page 32
J	Verify the Discovery Process on page 34
K	Troubleshooting Discovery Process on page 67
L	Assign Policies to the Managed Node on page 35
M	Deploy the JBoss AS SPI Policies on page 35
N	Launch Configure Tool on page 36

Figure 5 Flowchart on steps for installing and configuring the SPI for Linux



Click a hyperlink below to find the detailed information.

Table 2 References of the legends in the flowchart

Legend	Location
A	Installation Prerequisites on page 19
B	Installing the JBoss AS SPI on page 20
C	Verifying the Installation on page 24
D	Prerequisite on page 25
E	Add Nodes to the JBoss Node Group on page 28
F	Assign Categories to the Managed Node on page 30
G	Deploy Instrumentation on the Managed Node on page 31
H	Launch Discover Tool on page 32
I	Verify the Discovery Process on page 34
J	Troubleshooting Discovery Process on page 67
K	Assign Policies to the Managed Node on page 35
L	Deploy the JBoss AS SPI Policies on page 35
M	Launch Configure Tool on page 36

Installation Packages

Linux

SPI Package

The core package is the `HP_Operations_Smart_Plug-ins_Linux_setup.bin`, which contains all the SPI functionality. The package must be installed on a server managed by HPOM. The SPIs consists of policies and instrumentation (binaries or scripts) that monitor the application server. Monitoring consists of alarms related to critical events of the application, and the logging of important performance metrics of the application server. The metrics that are logged can be used to create graphs.

Location of the main package:

<SPI DVD>\HP_Operations_Smart_Plug-ins_Linux_setup.bin

Graphing Package

This package contains the default graphing templates provided by the SPI. Graphs are drawn from metrics that are collected in the datasources created by the SPI. The name and location of the graphing package are:

- For HP-UX: `/HPUX/HP_PM/JBOSS_SPI/HPOvSpiJbsG.depot`
- For Windows: `\WINDOWS\HP_PM\JBOSS_SPI\HPOvSpiJbsG.msi`

- For Solaris: /SOLARIS/HP_PM/JBOSS_SPI/HPOvSpiJbsG.sparc
- For Linux: The core and graph templates packages for JBS SPI are contained in the main packages for Linux mentioned earlier.

HP-UX

SPI Package

The core package is the HP_Operations_Smart_Plug-ins_HPUX.depot, which contains all the SPI functionality. The package must be installed on a server managed by HPOM. The SPIs consists of policies and instrumentation (binaries or scripts) that monitor the application server. Monitoring consists of alarms related to critical events of the application, and the logging of important performance metrics of the application server. The metrics that are logged can be used to create graphs.

Location of the main package:

```
<SPI DVD>\HP_Operations_Smart_Plug-ins_HPUX.depot
```

Graphing Package

This package contains the default graphing templates provided by the SPI. Graphs are drawn from metrics that are collected in the datasources created by the SPI. The name and location of the graphing package are:

- For HP-UX: The core and graph templates packages for JBS SPI are contained in the main packages for HP-UX mentioned earlier.
- For Windows: \WINDOWS\OV_PM\JBOSS_SPI\HPOvSpiJbsGc.msi

Installation Environments

Standard Installation of SPI Components on the HPOM Server

You can install the full version of HP Performance Manager on the HPOM server. You can select to install only the SPI packages and not the graphing packages through the HP Operations Smart Plug-Ins DVD. However, if the full version of Performance Manager is installed on the same machine, the corresponding packages can be installed or uninstalled on the HPOM server.

Standalone HP Performance Manager

For a standalone machine, only the corresponding package of the JBoss AS SPI is enabled and available for selection from the HP Operations Smart Plug-Ins DVD. For example, if a system has only HP Performance Manager installed, the graphing package of the JBoss AS SPI can be installed on the system.

Standard Installation in the HPOM Cluster Environment for HP-UX

In an HPOM cluster environment, you must have installed the HPOM server on each of the systems in the cluster. You can install the SPI on each of the nodes in the cluster environment.

Installation Prerequisites

Fulfill the hardware and software requirements before installing the SPI. Install the HPOM server and discovery package before installing the JBoss AS SPI. It is not necessary to stop HPOM sessions before beginning the JBoss AS SPI installation.

Hardware Requirements

See the *HP Operations Manager for UNIX* documents for information on hardware requirements for the management server and managed nodes. See the Support Matrix (SUMA) link <http://support.openview.hp.com/selfsolve/document/KM323488> for information on hardware requirements for the managed nodes.

Software Requirements

Make sure that the following software requirements are completed prior to the installation of the JBoss AS SPI:

On the Management Server:

HP-UX

- HP Operations Manager for UNIX: 9.0x
- HP Performance Manager: 8.20 (required if you want to generate graphs)
- HP Reporter: 3.80 (required if you want to generate web-based reports)
- HP Operations SPI Data Collector (DSI2DDF): 2.40
- HP SPI Self-Healing Services (SPI-SHS-OVO): 3.00
- JMX Component (JMXSPI): 7.00
- HP Operations SPI Upgrade Toolkit (SpiSutk): 2.00

Linux

- HP Operations Manager for Linux: 9.0x
- HP Performance Manager (Linux): 8.21 (required if you want to generate graphs)
- HP Reporter: 3.80 (required if you want to generate web-based reports)
- HP Operations SPI Data Collector (DSI2DDF): 2.41
- HP SPI Self-Healing Services (SPI-SHS-OVO): 3.01
- JMX Component (JMXSPI): 7.01
- HP Operations SPI Upgrade Toolkit (SpiSutk): 2.01

On the Managed Nodes (for both HP-UX and Linux):

- HP Performance Agent: 5.00 (required if you want to use HP Performance Agent for data logging)
- HP Operations Agent (version 8.60 must be installed and configured)

Installing the JBoss AS SPI

Follow the instructions provided in the sections given below to install the JBoss AS SPI on a local management server.

On a Local Management Server

Mounting the DVD on HP-UX

- 1 Log on as user root.
- 2 Set the user root's umask by entering:
`umask 027`
- 3 Create a directory to mount the DVD:
`mkdir /<mount_point>`
For example: `mkdir /dvdrom`
- 4 Insert the DVD into the disk drive and mount the DVD as user root by entering:
`mount /dev/<dvdrom_drive_name> /<mount_point>`

For example, for a local DVD, you might enter:

```
mount /dev/dsk/c0t2d0 /dvdrom
```

You can also run SAM and mount the DVD to a specific path in the Disks and File Systems window.

Installing the JBoss AS SPI



The instructions that follow show the command line usage of `swinstall`. On HP-UX systems, you can also use the graphical user interface (GUI).

To install the JBoss AS SPI on the HP-UX management server, run the following command:

```
swinstall -s /dvdrom/UNIX/HP_Operations_Smart_Plug-ins_HPUX.depot JBSSPI
```

To install the SPI on the Linux management server, perform any of the following procedures:

- Installing the SPI through Graphical User Interface
- Installing the SPI through Command Line Interface

Installing the SPI through Graphical User Interface

To install the JBoss AS SPI using X-Windows client software, perform the following steps:

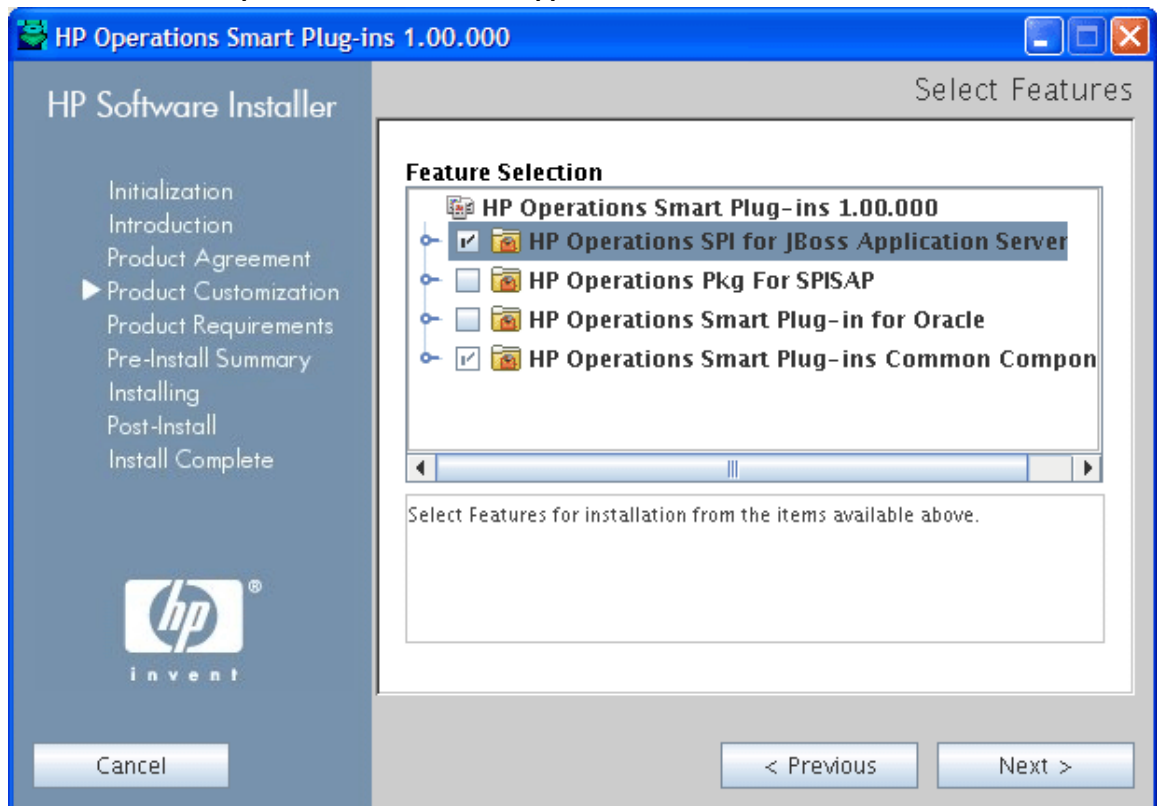
- 1 Log on as a `root` user.

- 2 Insert the HP Operations Smart Plug-ins DVD into the DVD drive of the Linux management server. Mount the DVD if necessary.
- 3 Start the X-windows client software and export the DISPLAY variable by typing the following command:


```
export DISPLAY=<ip address>:0.0
```
- 4 To start the installation, type the following command:


```
./HP_Operations_Smart_Plug-ins_Linux_setup.bin
```

 The introductory window opens.
- 5 Select the language from the drop-down list and click **OK**.
The Introduction(Install) window opens.
- 6 Click **Next**.
The License Agreement window opens.
- 7 Select **I accept the terms of the License Agreement** radio button and click **Next**.
The Select Features window opens.
- 8 Select the **HP Operations SPI for JBoss Application Server** check box and click **Next**.



▶ By default, the HP Operations Smart Plug-in Common Components is selected.

- The Install Check window opens.
- 9 Click **Next**. The Pre-Install Summary window opens.
 - 10 Click **Install**.
While installing, you might see the Force reinstallation of already installed component packages check box. You can use either of the following options:

- Select the Force reinstallation of already installed component packages check box to reinstall the selected components, as applicable.
- Clear the Force reinstallation of already installed component packages check box to prevent reinstallation of the selected HP Software components, as applicable. Clearing the check box does not change the currently installed software components.

If the installation fails, you can quit installation. Clicking **Quit** stops the installation, but does not uninstall the components installed till then.

The Installing window opens. The Install Complete window opens once the SPI is uninstalled.

- 11 Click **Done** to complete the installation.

Installing the SPI through Command Line Interface

To install the JBoss AS SPI through command line interface, perform the following steps:

- 1 Log on as a **root** user.
- 2 Insert the HP Operations Smart Plug-ins DVD into the DVD drive of the Linux management server. Mount the DVD if necessary.
- 3 To start the installation, type the following command:

```
./HP_Operations_Smart_Plug-ins_Linux_setup.bin -i console
```
- 4 When the prompt, 'Choose Locale...' appears, press the number corresponding to the language you want to choose.
- 5 Press **Enter** to continue.
The Introduction screen appears.
- 6 Press **Enter** to continue. The License agreement content appears.
- 7 When the prompt, 'I accept the terms of the License Agreement' for the License information appears, press **Y** to accept the terms and continue installation.

- 8 When the prompt, 'Please select Features' for the selection of the feature appears, press the number corresponding to the feature you want to install.

```
documentation by the applicable FAR or DFARS clause or the HP standard
software agreement for the product involved.

I accept the terms of the License Agreement (Y/N): Y

=====
Select Features
-----

Install Features represent a group of functionality
If you want to change something on a previous step, type 'back'.
You may cancel this installation at any time by typing 'quit'.

    1- HP Operations SPI for JBoss Application Server(Optional)
    2- HP Operations Pkg For SPISAP(Optional)
    3- HP Operations Smart Plug-in for Oracle(Optional)
->4- HP Operations Smart Plug-ins Common Components(Required)

Please Select Features(Use a comma to separate your choices)
: █
```

➤ When you have installed one SPI on the Linux management server and want to install another SPI on the server, you have to reselect the previously installed SPI and select the required SPI from the Modify option. If you do not reselect the previously installed SPI, it removes the previously installed SPI and installs the selected SPI on the Linux management server.

- 9 Press **Enter**.

A series of message appears. Follow the instructions as displayed in the message.

When the installation is complete, you will receive a message which states that the installation is completed successfully.

In the HPOM Cluster Environment on HP-UX

You must first install the HPOM management server on each system in the cluster. When the management server cluster installations are complete, the setup for the installation of the JBoss AS SPI is ready.

➤ Before beginning, make sure that sufficient disk space (500 MB) is available on each management server for the JBoss AS SPI you plan to install. Cancelling the installation process before completion could result in partial installations and require manual removal of the partially installed components.

After installing the HPOM management server, proceed as follows:

For the first installation (Node A) and all remaining installations in the cluster — Follow the standard installation procedure by either making the product choices or typing the name of the SPI component you want to install. Once you complete the installation on Node A, proceed to the next node. Repeat the same procedure proceeding from one node to another until you have completed installing the SPI on each of the nodes in the cluster.

Installing the JBoss AS SPI on the Cluster-Aware Management Server

Complete all the tasks in the section [On a Local Management Server](#) on page 20 and then proceed to the next management server until the installation on every management server in the cluster is complete.



The HPOM console will not function properly until installations are completed on all nodes in the cluster.

Verifying the Installation

HP-UX: Type the command `swlist` to verify the installation of the JBoss AS SPI on the management server.

Linux: Verify the `JBSSSPI_Install.log` file to check if the installation is successful. The path of this file is `/var/opt/OV/log/SPIInstallLogs`.

3 Configuring the JBoss AS SPI

Prerequisite

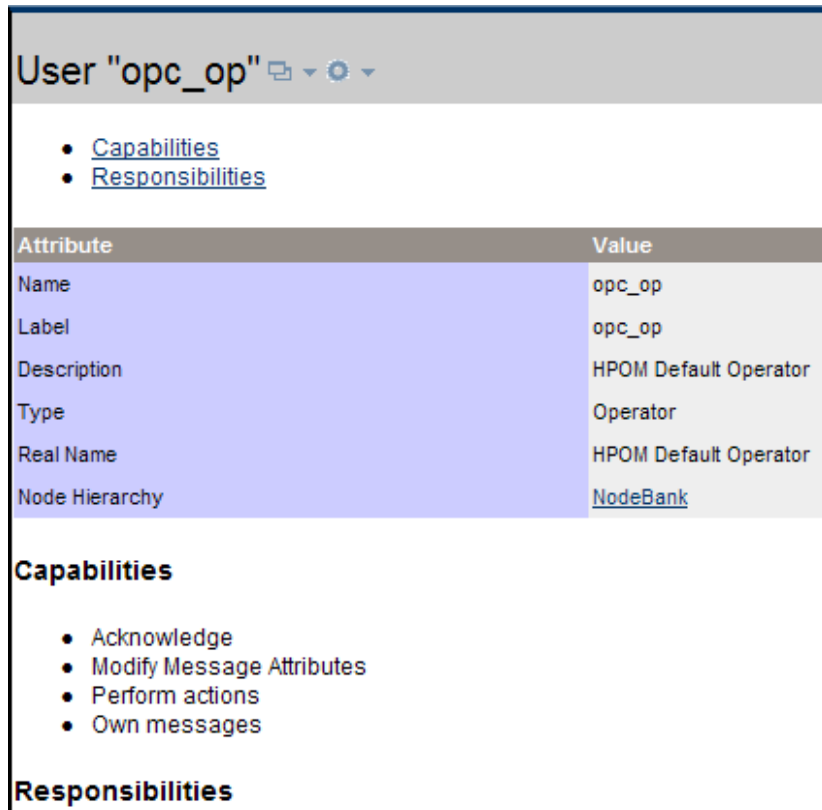
Before launching the Discover or Configure JBSSPI tool, make sure that the `jmx-remoting.sar` file (version 5.0.0.GA or below) is present within the deploy directory of the configuration because the instances of only those JBoss Application Servers can be identified for which the JSR 160 SAR has been specified. For example, `$JBOSS_HOME\server\<ServerName>\deploy\jmx-remoting.sar`.

Log on to HPOM as an administrator. The Administration UI window opens. Complete the following tasks before configuring the JBoss AS SPI:

Assign Operator Responsibilities (Optional)

- 1 Select **All Users** → **<Operator name>**. For example, `opc_op`.

The User “opc_op” window opens.



The screenshot shows the configuration page for the user "opc_op". At the top, there are navigation icons and a title "User 'opc_op'". Below the title, there are two links: "Capabilities" and "Responsibilities". A table lists the user's attributes and their values. Below the table, there are sections for "Capabilities" and "Responsibilities".

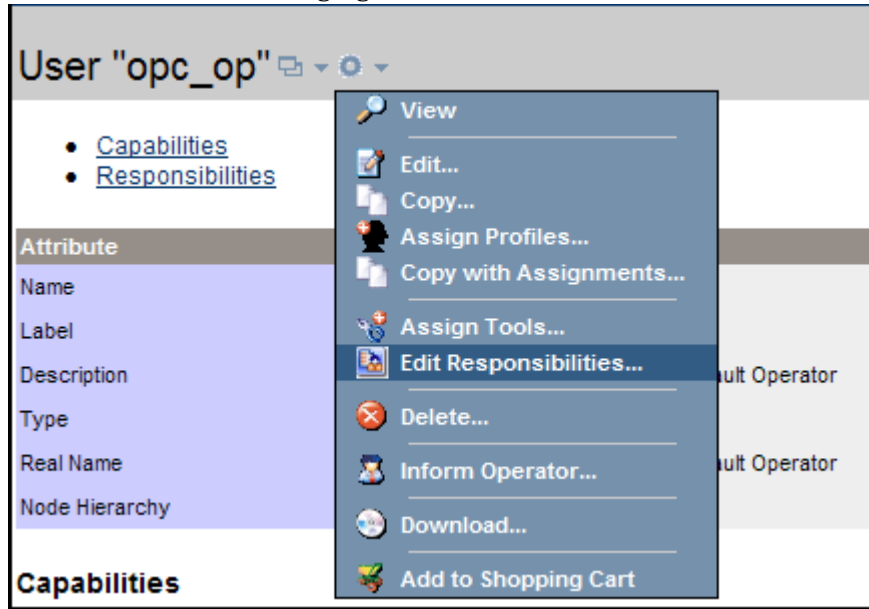
Attribute	Value
Name	opc_op
Label	opc_op
Description	HPOM Default Operator
Type	Operator
Real Name	HPOM Default Operator
Node Hierarchy	NodeBank

Capabilities

- Acknowledge
- Modify Message Attributes
- Perform actions
- Own messages


Responsibilities

- 2 To change a User's responsibility, select **Edit Responsibilities...** from the drop-down list as shown in the following figure.



- 3 For JBSSPI and JBoss Message Groups, make sure all check boxes are selected.
- 4 Assign the JBSSPI Node or Message Groups to any other appropriate operators.
- 5 Click **Close**.

Assign Tools to the Operator

- 1 Open the Tool Bank window and select the SPI for JBoss Application Server tool group.
- 2 Select **Assign to User/Profile...** from the **Choose an Action** drop-down list and click  to submit.

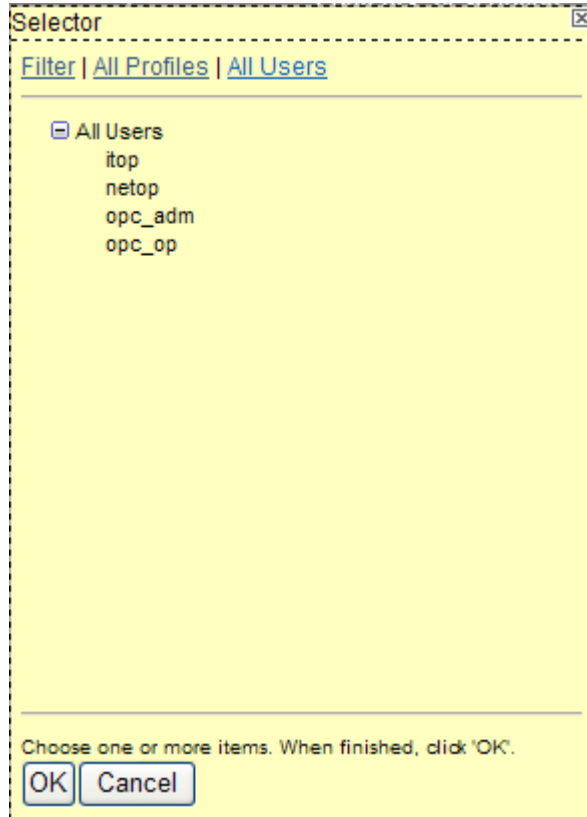
The Selector window opens.

The screenshot shows the 'Tool Bank' application window. A 'Selector' dialog box is open over the table. The dialog has a 'Filter' section with 'All Profiles' and 'All Users' options. Below this, there are fields for 'Locate' (set to 'Users'), 'Name' (set to 'contains'), and 'Label' (set to 'contains'). A 'Filter' button is present. The main content of the dialog shows a message: 'Filtered User Profiles: No matches. Please change filter.' At the bottom of the dialog are 'OK' and 'Cancel' buttons. The background table lists various tools with columns for Type, Label, Name, Contents, and Description.

Type	Label	Name	Contents	Description
<input type="checkbox"/>	Certificate Tools	Certificate Tools	0 / 3	Application Gr
<input type="checkbox"/>	OV Composer	Correlation Composer	0 / 3	HP OpenView
<input type="checkbox"/>	Distr NNM Admin Tools	Distr NNM Admin		
<input checked="" type="checkbox"/>	SPI for JBoss Application Server	JBSSPI:TOOLS		
<input type="checkbox"/>	Jovw (old)	Jovw (old)		
<input type="checkbox"/>	Launch SiteScope Dashboard	Launch SiteSco		
<input type="checkbox"/>	OMU Administration UI	midas_apps		
<input type="checkbox"/>	Net Diag	Net Diag		
<input type="checkbox"/>	NNM Admin Tools	NNM Admin Too		
<input type="checkbox"/>	NNM-ET Views	NNM-ET Views		
<input type="checkbox"/>	NNMi	NNMi		
<input type="checkbox"/>	NNMi Int-Admin	NNMiIntAdmin		
<input type="checkbox"/>	NNM Views	NNM Views		
<input type="checkbox"/>	NT Tools	NT Tools		
<input type="checkbox"/>	OM License Tools	OMU License To		
<input type="checkbox"/>	SiteScope Adapter	SiteScope Adap		
<input type="checkbox"/>	SiteScope SAM ADMIN	SiteScope SAM		
<input type="checkbox"/>	SPI for Web Servers	SPI for Web S		
<input type="checkbox"/>	SSP Tools	SSP Tools		
<input type="checkbox"/>	UN*X Tools	UN*X Tools		

- 3 Click **All Users**.

- 4 Select the operator to which you want to assign the tools.



- 5 Click **OK**.


The JBoss AS SPI tools are assigned to the operator.

Configuring the JBoss AS SPI

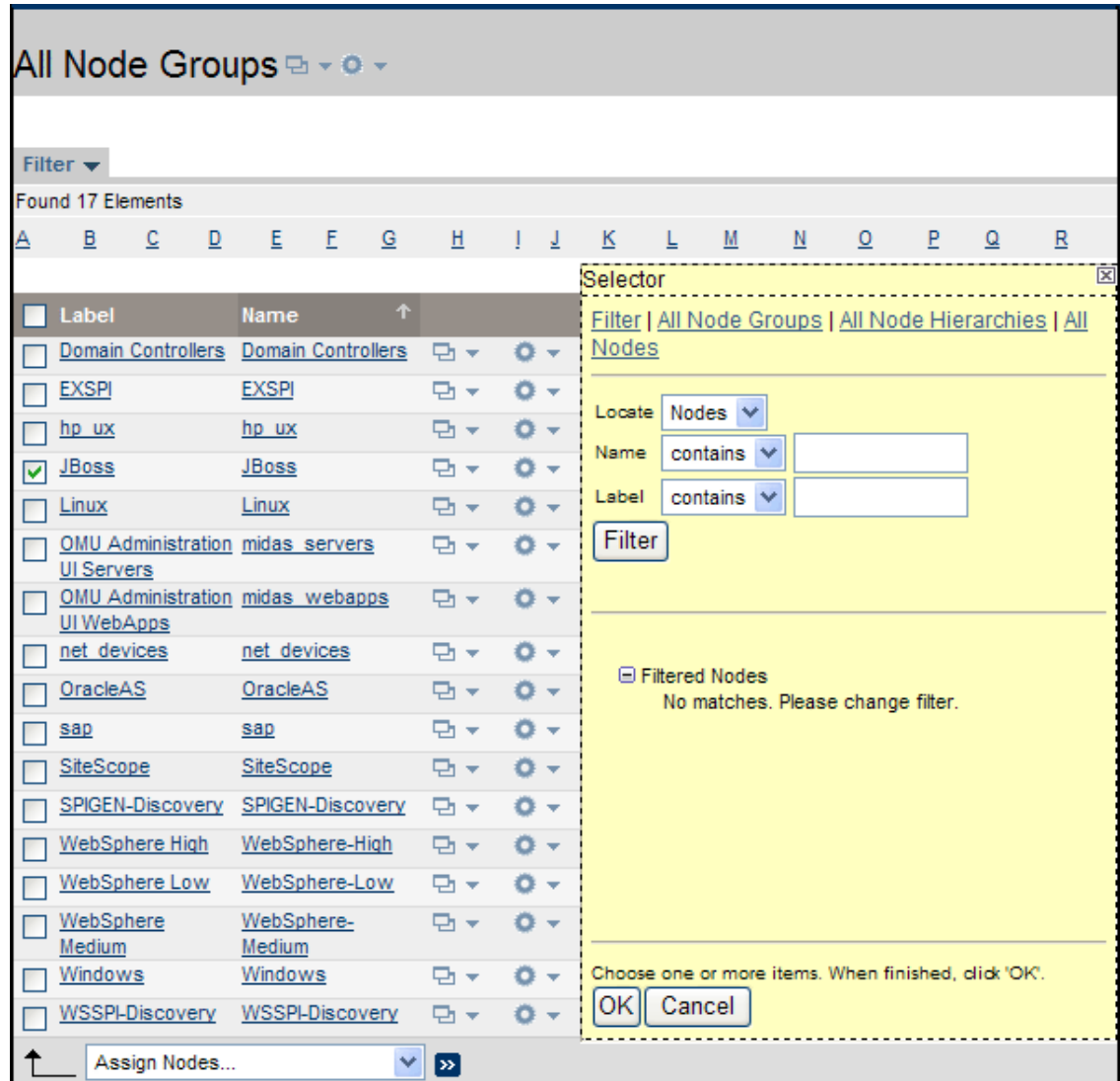
Complete the following tasks from the management server:

Add Nodes to the JBoss Node Group

The JBoss AS SPI automatically creates the JBoss node group with preassigned policy groups. To place all nodes running the JBoss Application Server in this node group, follow these steps:

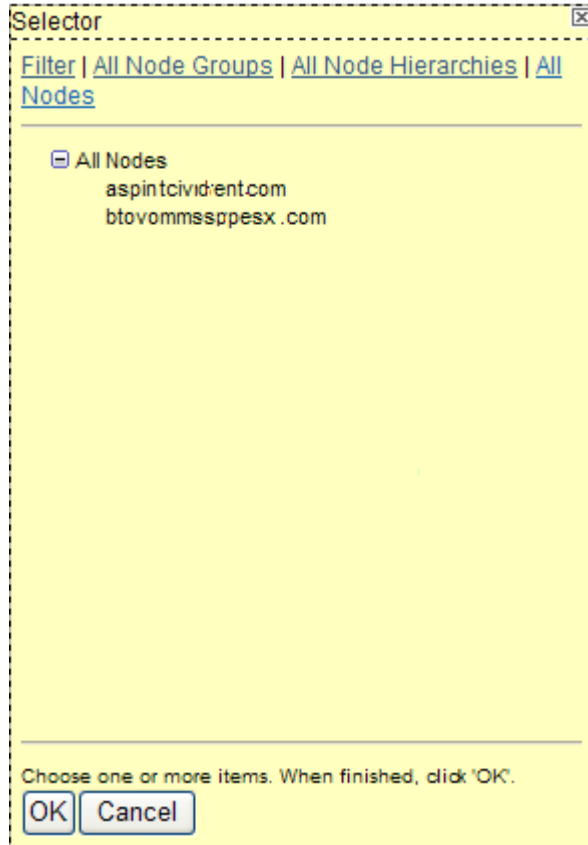
- 1 Open the All Node Groups window and select the JBoss Node Group.
- 2 Select **Assign Nodes...** from the **Choose an Action** drop-down list and click  to submit.

The Selector window opens.




- 3 Click **All Nodes**.

- 4 Select the nodes running the JBoss Application Server.

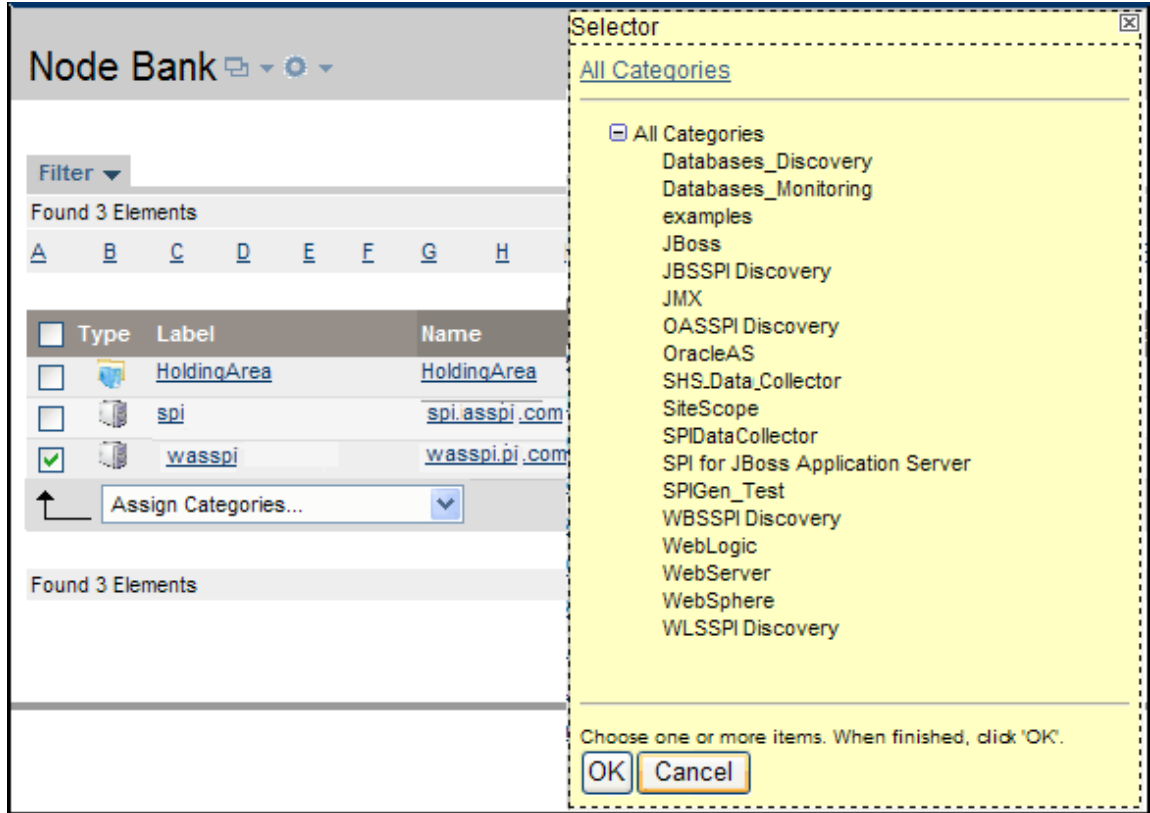


- 5 Click **OK**.

Assign Categories to the Managed Node


- 1 Open the Node Bank window and select the managed nodes.
- 2 Select **Assign Categories...** from the **Choose an Action** drop-down list and click  to submit.

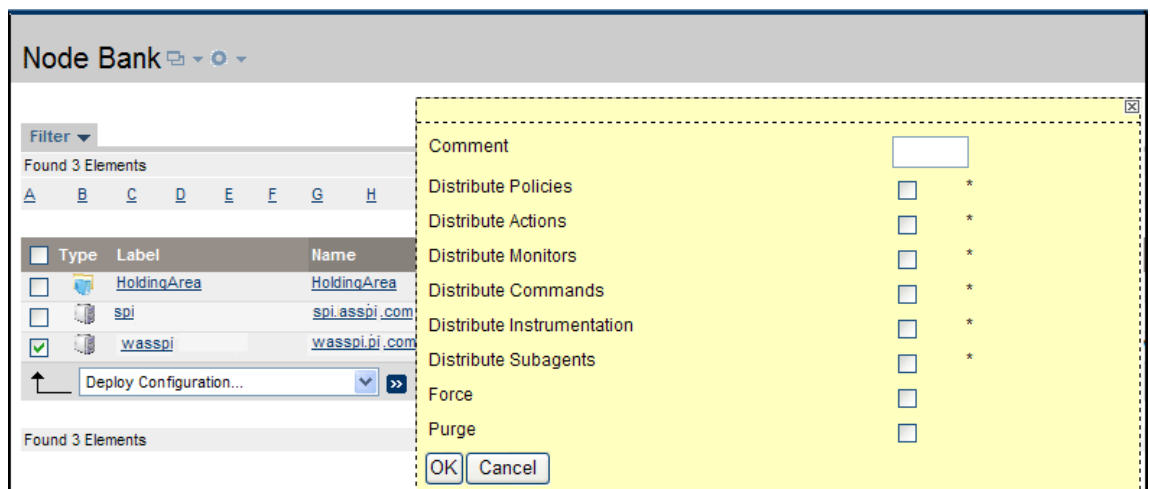
The Selector window opens.



- 3 Select the **JBoss**, **JBSSPI Discovery** (optional), **JMX**, **SHS_Data_Collector**, and **SPIDataCollector** categories.
- 4 Click **OK**.

Deploy Instrumentation on the Managed Node

- 1 Open the Node Bank window and select the management server.
- 2 Select **Deploy Configuration...** from the **Choose an Action** drop-down list and click  to submit.



- 3 Select **Distribute Instrumentation** by selecting the corresponding check box.

Comment	<input type="text"/>
Distribute Policies	<input type="checkbox"/> *
Distribute Actions	<input type="checkbox"/> *
Distribute Monitors	<input type="checkbox"/> *
Distribute Commands	<input type="checkbox"/> *
Distribute Instrumentation	<input checked="" type="checkbox"/> *
Distribute Subagents	<input type="checkbox"/> *
Force	<input type="checkbox"/>
Purge	<input type="checkbox"/>

OK Cancel

- 4 Click **OK**.

Launch Discover Tool

- 1 Select **Integrations** → **HPOM for Unix Operational UI**. See [Important](#) on page 46 for the information on how to invoke GUIs.
- 2 Select the node on which you want to launch the tool.
- 3 Right-click the node and select **Start** → **SPI for JBoss Application Server** → **SPI Admin** → **Discover or Configure JBSSPI**.

The Tool Selector window opens.

- 4 Select the Launch Discover Tool radio button and click **OK**. By default, the Launch Configure Tool radio button is selected.

The first page of the Introduction window opens.

- 5 Click **Next**.

The next page of Introduction window opens.

- 6 Click **Next**.

The Configuration Editor opens.

If you have already set the LOGIN, PASSWORD, JAVA_HOME, and JBOSS_HOME_LIST, proceed to Step 8.

If you have not set the LOGIN, PASSWORD, JAVA_HOME, and JBOSS_HOME_LIST, proceed to the next step.

- 7 Perform the following steps to set the required properties.



Make sure that the LOGIN, PASSWORD, JAVA_HOME, and JBOSS_HOME_LIST properties are set since these are mandatory properties. In earlier versions of the SPI, only LOGIN and PASSWORD were required properties.

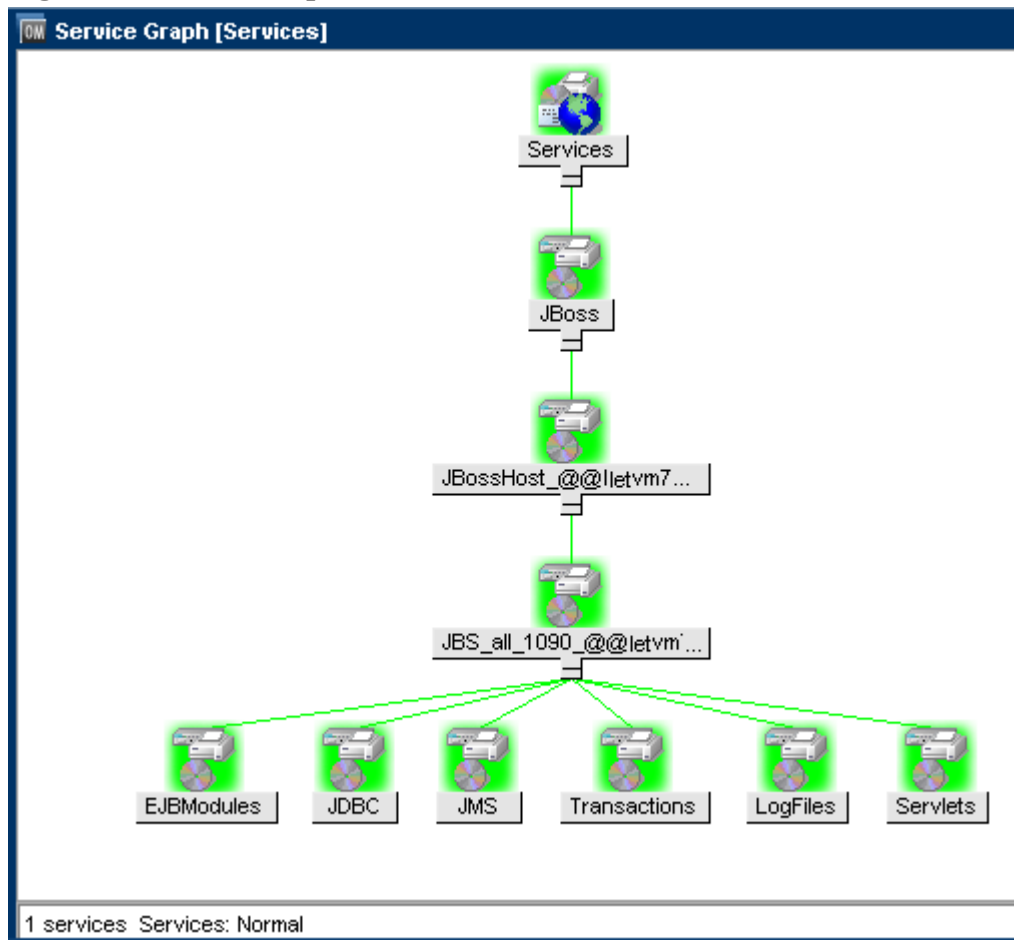
- a Select default properties for all groups and nodes from the left-hand pane. Select LOGIN/PASSWORD from the **Select a Property to Set...** drop-down list.

Verify the Discovery Process

- 1 Verify that the following message appears in the message browser for each managed node.
WASSPI-701 JBoss Discovery is successful

Depending on the number of managed nodes in your environment, it might take several minutes for these messages to display for all managed nodes.
- 2 Select **File** → **Reload Configurations**. In the Services tree on the left-hand pane in the message browser, open the Application node and look for the JBoss service.
- 3 Click the **Services** tab in the message browser to view the service map. Using the Service Map, you can find out the application/services that have a problem (if any). The lines in the Service Map are coded with different colors to show various levels of severity. For example, red lines show that the application has critical problems.

Figure 6 Service Map



If you have problems with the discovery process, see [Troubleshooting Discovery Process](#) on page 67.




If the service map is not displayed in the Operational UI, type the following command to assign the services to the operator:

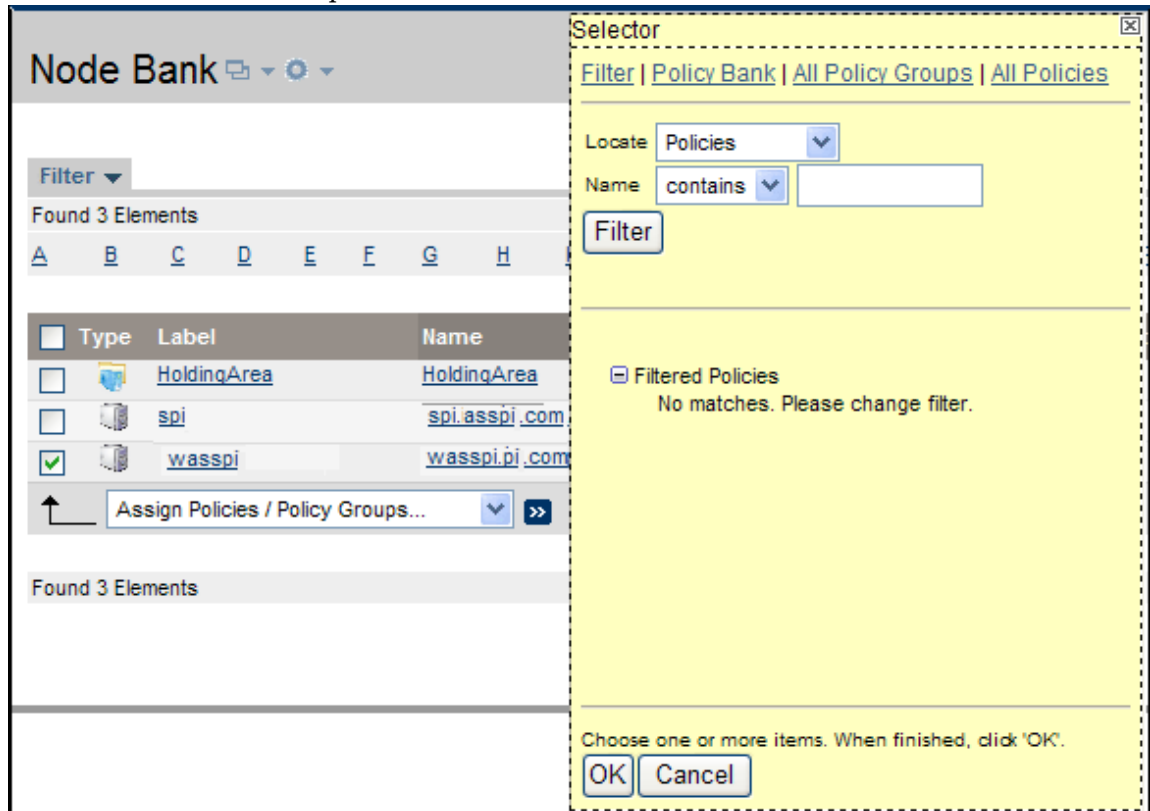
```
opcservice -assign <operator> <service>
```

For example: **opcservice -assign opc_adm <service>**

Assign Policies to the Managed Node

- 1 Open the Node Bank window and select the managed nodes.
- 2 Select **Assign Policies / Policy Groups...** from the **Choose an Action** drop-down list and click  to submit.

The Selector window opens.

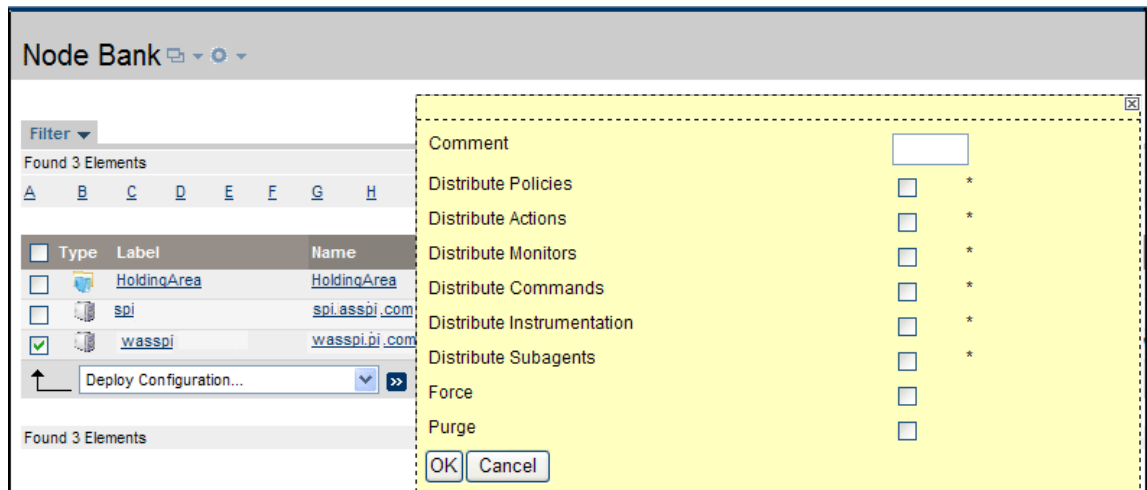


- 3 Click **Policy Bank**.
- 4 Select the policies you want to assign to the managed node from the **SPI for JBoss Application Server** policy group.
- 5 Click **OK**.

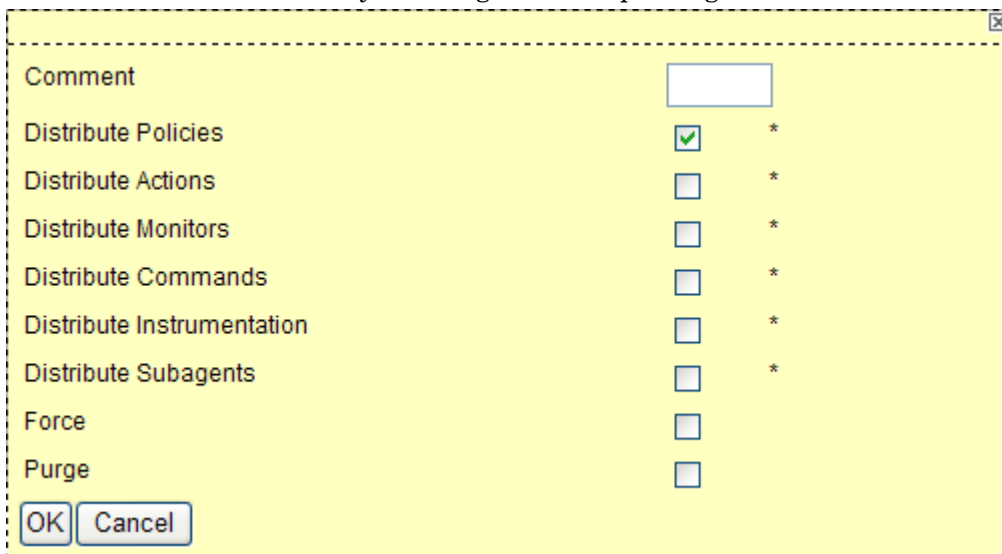
Deploy the JBoss AS SPI Policies

- 1 Open the Node Bank window and select the managed nodes.

- 2 Select **Deploy Configuration...** from the **Choose an Action** drop-down list and click  to submit.



- 3 Select **Distribute Policies** by selecting the corresponding check box.



- 4 Click **OK**.

After the policies are deployed, the monitors can now run according to their specific collection interval.

Launch Configure Tool

- 1 Select **Integrations** → **HPOM for Unix Operational UI**.
- 2 Select the node on which you want to launch the tool.
- 3 Right-click the node and select **Start** → **SPI for JBoss Application Server** → **SPI Admin** → **Discover or Configure JBSSPI**.

The Tool Selector window opens.

- 4 Click **OK**. By default, the Launch Configure Tool radio button is selected.

The Introduction window opens.

- 5 Click **Next**.

The Configuration Editor opens.



Make sure that the LOGIN, PASSWORD, JAVA_HOME, and JBOSS_HOME_LIST properties are set. You cannot proceed to the next window if the required properties are not set. See step 7 on page 32 for information on how to set the properties.

- 6 Set the configuration properties at the global or server specific level. For more information on the usage of configuration editor, see [Appendix B, The Configuration](#).
- 7 Click **Save** to save any changes made to the configuration. After you save the changes, you cannot undo the changes automatically.
- 8 Click **Finish** to exit the editor and start configuring the JBoss AS SPI on the managed node.



If you click **Cancel**, the changes made by you are not saved to the selected managed nodes' configuration and remain in the configuration on the management server.

Configuring creates data sources for datalogging (graphing) and sets up the JBoss AS log files and the JBoss AS SPI error log file for monitoring.

For more information about the configuration structure, see [Structure](#) on page 81.

JBoss AS SPI in High Availability Environments

High availability is a general term used to characterize environments that are business critical and therefore are protected against downtime through redundant resources. Very often, cluster systems are used to reach high availability.

You can configure the JBoss AS SPI to accommodate cluster environments where failovers allow uninterrupted availability of JBoss AS. The JBoss AS SPI monitoring, when synchronized with the cluster environment, can switch off from the failed node to the active node.

Configuration Prerequisites

The prerequisites for using the JBoss AS SPI in high availability environments are:

- Management Server: HPOM for UNIX 9.0x or Linux 9.10
- Node: Veritas cluster
- HPOM 8.x HTTPS Agent version (for details see Agent cluster support matrix)

Configuring the JBoss AS SPI for High Availability Environments

To configure the JBoss AS SPI for use in high availability environments complete the following tasks:

Create the JBoss AS SPI monitoring configuration file

The JBoss AS SPI uses a monitoring configuration file `<appl_name>.apm.xml` that works in conjunction with the clustered application configuration file.



`<appl_name>` is the namespace_name. For more information, see *HP Operations Manager for UNIX HTTPS Agent Concepts and Configuration Guide*.

The `<appl_name>.apm.xml` file lists all the JBoss AS SPI templates on the managed node so that you can disable or enable these templates as appropriate, for inactive and active managed nodes.

To create this clustered application configuration file for your JBoss AS environment, follow these steps:

- 1 Use the following syntax to create the `<appl_name>.apm.xml` file:

```
<?xml version="1.0"?>
<APMApplicationConfiguration>
  <Application>
    <Name> ... </Name>
    <Template> ... </Template>
    <StartCommand>wasspi_perl -S wasspi_clusterSvrApp -opt startMonitor
    $instancename</StartCommand>
    <StopCommand>wasspi_perl -S wasspi_clusterSvrApp -opt stopMonitor
    $instancename</StopCommand>
  </Application>
</APMApplicationConfiguration>
```

- 2 Enter the namespace_name within the `<Name></Name>` tag.

- 3 After the file is created, save it in the `$OvDataDir/bin/instrumentation/conf` directory.

Sample `jbsspi.apm.xml` file

```
<?xml version="1.0"?>
<APMAApplicationConfiguration>
  <Application>
    <Name>jbsspi</Name>
    <Template>JBSSPI Java Discovery Error Log</Template>
    <Template>JBSSPI Java Collector Error Log</Template>
    <Template>JBoss Server Log Monitor</Template>
    <Template>JBoss Error Log</Template>
    <Template>JBSSPI-05min</Template>
    <Template>JBSSPI-Performance</Template>
    <StartCommand>wasspi_perl -S wasspi_clusterSvrApp -opt startMonitor
$instanceName</StartCommand>
    <StopCommand>wasspi_perl -S wasspi_clusterSvrApp -opt stopMonitor
$instanceName</StopCommand>
  </Application>
</APMAApplicationConfiguration>
```

To prevent the agent from running the policies on a passive node, you must mention the policy names within the `<template></template>` tag.



`<appl_name>.apm.xml` is dependent on the application namespace. It is not dependent on the instance level. Therefore, the start and stop actions are provided with the associated instance name as their first parameter when they are executed at package switch time. The environment variable `$instanceName` is set by CIAW when start or stop tasks are performed.

Create the clustered application configuration file

The clustered application configuration file `apminfo.xml`, working in conjunction with the `<appl_name>.apm.xml` file of the JBoss AS SPI, allows you to associate the JBoss AS SPI monitored instances with cluster resource groups. As a result, when you move a resource group from one node to another, in the same cluster, monitoring stops on the failed node and starts on the new node.

To create the clustered application configuration file `apminfo.xml` follow these steps:

- 1 Use a text editor to create the file. The syntax is:

```
<?xml version="1.0" ?>
<APMClusterConfiguration>
  <Application>
    <Name>namespace_name</Name>
    <Instance>
      <Name><Instance Name></Name>
      <Package><Package Name></Package>
    </Instance>
  </Application>
</APMClusterConfiguration>
```

- 2 Enter `namespace_name` within the `<Name></Name>` tag.
- 3 Save the `apminfo.xml` file in the `$OvDataDir/conf/OpC` directory.

Sample apminfo.xml file

```
<?xml version="1.0" ?>
  <APMClusterConfiguration>
    <Application>
      <Name>jbsspi</Name>
      <Instance>
        <Name>all</Name>
        <Package>ClusterService</Package>
      </Instance>
    </Application>
  </APMClusterConfiguration>
```

Configure the JBoss AS SPI

To configure the JBoss AS SPI, follow these steps:

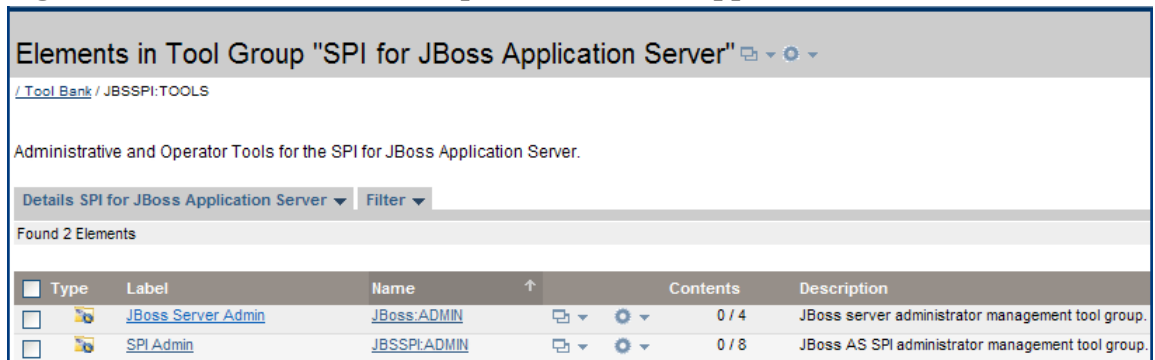
- 1 Deploy the instrumentation files on the target cluster nodes.
- 2 Launch the Discover or Configure JBSSPI tool with the active cluster node as the target. For details about launching the discovery tool, see [Launch Discover Tool](#) on page 32.
- 3 Launch the Discover or Configure JBSSPI tool with the active cluster node as the target. For details about launching the configure tool, see [Launch Configure Tool](#) on page 36.
- 4 Deploy all the required policies on the active node. For details about deploying the policies, see [Deploy the JBoss AS SPI Policies](#) on page 35.
- 5 Repeat the steps 2, 3 and 4 on the passive node. To perform these steps on the passive node, you must failover to the passive node (for JBoss AS to be available).

4 Using Tools

The JBoss AS SPI offers centralized tools that help you monitor and manage systems using the JBoss Application Server. The JBoss AS SPI tools enable you to configure the management server's connection to selected server instances on specific managed nodes. The JBoss AS SPI tools include the tools for administrating and operating the SPI for JBoss Application Server.

To access the JBoss AS SPI tools, open the Tool Bank window and click **SPI for JBoss Application Server (JBSSPI:Tools)**.

Figure 7 Elements in Tool Group “SPI for JBoss Application Server”



The JBoss AS SPI tools contain the following two tool groups:

- JBoss Server Admin
- SPI Admin

SPI Admin Tools Group

The SPI Admin tools group consists of the following tools that enable you to perform the tasks related to the JBoss AS SPI. To access the SPI Admin tools, click **Tool Bank** → **JBSSPI:TOOLS** → **SPI Admin**.

- **Self-Healing Info** – Gathers data that you can send to your HP support representative.
- **Discover or Configure JBSSPI** – Enables you to identify instances of a JBoss Application Server on a managed node monitored by the JBoss AS SPI and displays the status in the HPOM console Service map or enables you to maintain the JBoss AS SPI configuration by viewing, editing, or setting configuration properties in the configuration editor.
- **Start Monitoring**– Starts the collection of metrics for one application server or all application servers on a managed node. By default, monitoring is on.
- **Stop Monitoring**– Stops the collection of metrics for one application server or all application servers on a managed node.

- **Start Tracing**– Starts logging the information about each of the activities performed by the SPI on the managed node. Launch this tool only when instructed by your HP support representative.
- **Stop Tracing**– Stops saving the information about each of the activities performed by the SPI on the managed node into a file. Run this tool only when instructed by your HP support representative.
- **Verify**– Verifies that the JBoss AS SPI is properly installed on the server or managed node.
- **View Error Files**– Enables you to view the contents of the JBoss AS SPI internal log files.

Discover or Configure JBSSPI

You can run either the Configure or the Discover tool using Discover or Configure JBSSPI tool.

The tool Discover or Configure JBSSPI tool launches the configuration editor. The tool Discover or Configure JBSSPI allows you to either identify instances of a JBoss Application Server on a managed node from the HPOM console or maintain the JBoss AS SPI configuration by viewing, editing, or setting configuration properties in the configuration editor.

Function

The following functions are performed by running the Discover tool:

- Identifies instances of a JBoss Application Server on a managed node.
- Enables the JBoss AS SPI to detect the servers hosted on a managed node.
- Displays the following information for the different instances of JBoss Application Server in the HPOM console Service map:
 - J2EE components hosted on the server
 - Version
 - Port number
 - Name of the server
- Deploys the JBSSPI-Service Discovery and JBSSPI-Messages policies and JBOSS instrumentation file on the selected managed node(s).

The following functions are performed by running the Configure tool:

- Updates the configuration on the HPOM management server and selected managed nodes.
- Creates the directories and files required by the JBoss AS SPI on the selected managed nodes.
- Sets up data sources for graphing.
- Sets up the JBoss AS log files and the JBoss AS SPI error log file for monitoring.

Configuration information for all JBoss AS instances on all HPOM managed nodes is maintained on the HPOM management server. In addition, every managed node maintains information about the JBoss Application Servers running on that node.

When you make changes using the configuration editor, the changes are saved on the HPOM management server. However, if you select a node and launch the tool, the changes affecting the selected node are saved on that node itself.

To save any changes on a managed node, you must select the node before launching the Configure JBSSPI tool. By default, the changes are saved on the management server if the node is not selected.

Self-Healing Info

The tool Self-Healing Info gathers SPI troubleshooting data and stores the information in a file which you can submit to HP support for assistance.

Function

The tool Self-Healing Info performs the following functions:

- Saves the data in the following file:
 - On a UNIX managed node: `/tmp/JBossEAP_support.tar`
 - On a Windows managed node: `JBossEAP_support.zip` in `%TEMP%` directory

Start Monitoring

The tool Start Monitoring enables you to start the collection of metrics for the JBoss Application Server(s) on a managed node only if the monitoring has been stopped using the Stop Monitoring tool.

Function

The Start Monitoring tool starts the collection of metrics for the JBoss Application Server(s) on a managed node. By default, monitoring is on.

Stop Monitoring

The tool Stop Monitoring enables you to stop the collection of metrics for the JBoss Application Server(s) on a managed node.

Function

The Stop Monitoring tool stops the collection of metrics for the JBoss Application Server(s) on a managed node. By default, monitoring is on.

Start Tracing

The tool Start Tracing starts logging the information about each of the activity performed by the SPI on the managed node. Launch this tool only when instructed by your HP support representative.

Function

Start Tracing tool saves information about each of the activity performed by the SPI on the managed node into a file.

Stop Tracing

The tool Stop Tracing stops logging the information about each of the activity performed by the SPI on the managed node. Launch this tool only when instructed by your HP support representative.

Function

Stop Tracing tool stops saving information about each of the activity performed by the SPI on the managed node into a file.

Verify

The tool Verify enables you to verify whether all the instrumentation files are properly deployed.

Function

The Verify tool verifies whether all the instrumentation files are deployed properly. The tool gives a list of missing instrumentation files.

View Error Files

The tool View Error Files enables you to view the contents of the JBoss AS SPI internal log files.

Function

View Error Files displays the contents of the JBoss AS SPI internal log file <Agent_Dir>/wasspi/jbs/log/errorlog, where <Agent_Dir> typically is:

- On UNIX managed nodes: /var/opt/OV
- On Windows Managed Nodes: \Program Files\HP\HP BTO Software\ (for HTTPS managed nodes)

JBoss Server Admin Tools Group

The JBoss Server Admin tools group consists of the following tools that enable you to perform the tasks related to the JBoss Application Server. To access the JBoss Server Admin tools, click **Tool Bank** → **JBSSPI:TOOLS** → **JBoss Server Admin**.

- **Start JBoss Server** – Enables you to start one or more JBoss Application Servers on the selected managed nodes from the HPOM console.
- **JBoss Server Status**– Enables you to find the status of the JBoss Application Servers (server name, server state, start date) from the HPOM console.
- **Stop JBoss Server**– Enables you to stop one or more JBoss Application Servers on the selected managed nodes from the HPOM console.
- **View JBoss Logs**– Enables you to select a JBoss Application Server log file for viewing without logging in to the system on which the JBoss Application Server is running.

Start JBoss Server

The tool Start JBoss Server allows you to start the JBoss Application Servers from the HPOM console.

Function

The tool Start JBoss Server starts the JBoss Application Servers on the selected managed nodes.

Limitation

The Start JBoss Server tool will fail if JBoss EAP is started with -b option.

JBoss Server Status

The tool JBoss Server Status allows you to find the status of the JBoss Application Servers from the HPOM console.

Function

The tool JBoss Server Status finds the following information for each JBoss Application Server on the selected managed nodes:

Server Name	The server name as defined in the JBoss Application Server
Server State	The status of the JBoss Application Server
Start Date	The date when the JBoss Application Server was started

Stop JBoss Server

The tool Stop JBoss Server allows you to stop the JBoss Application Servers from the HPOM console.

Function

The tool Stop JBoss Server stops one or more JBoss Application Servers on the selected managed nodes.

View JBoss Logs

The tool View JBoss Logs allows you to select a JBoss Application Server log file for viewing without logging in to the system on which the JBoss Application Server is running.

Function

The tool View JBoss Logs displays the content of the log file (server.log) for all the application servers running on the selected managed nodes.

Launching Tools

This section describes how you can launch the tools for the JBoss AS SPI. The steps in [Launching Discover or Configure JBSSPI Tool](#) and [Launching All Tools](#) describes how you can launch the Discover or Configure JBSSPI tool and all the tools (excluding Discover or Configure JBSSPI) respectively.

Important

To invoke the GUIs related to the JBoss AS SPI, perform the following steps:

- 1 Install X-windows client software on the machine from which you will launch the HPOM for UNIX 9.0x server Operator GUI.
- 2 Start the X-windows client software.

Launching Discover or Configure JBSSPI Tool

See [Launch Discover Tool](#) on page 32 and [Launch Configure Tool](#) on page 36.

Launching All Tools

- 1 From the Administration UI, select **Integrations** → **HPOM for Unix Operational UI**.
- 2 Select the node on which you want to launch the tool.
- 3 Right-click the node and select **Start** → **SPI for JBoss Application Server** → *<Tool Group>* → *<Name of the Tool>*.

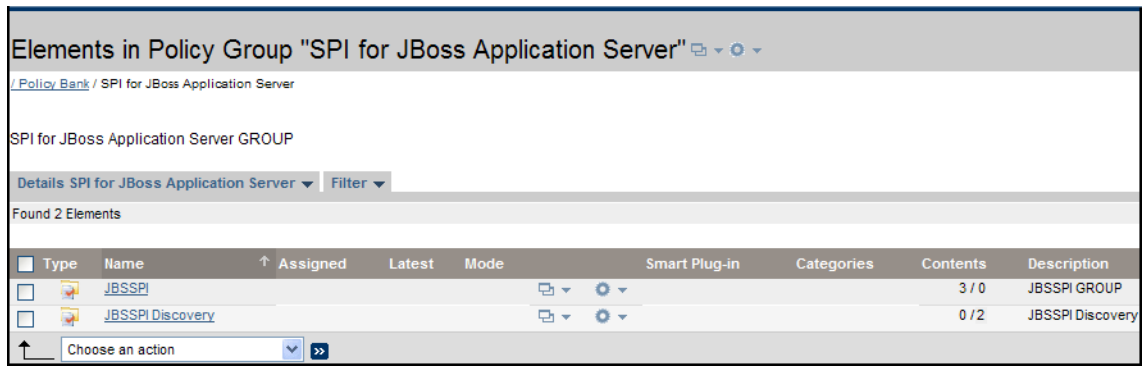
The *<Name of the Tool>* Output window opens.

5 Customizing the JBoss AS SPI Policies

The JBoss AS SPI consists of policies that monitor the JBoss Application Server. In the Policy Bank window, the SPI for JBoss Application Server policy group two broad categories of policies:

- JBSSPI
- JBSSPI Discovery

Figure 8 Elements in Policy Group “SPI for JBoss Application Server”



The JBSSPI policy group contains the following policy sub-groups and individual policies.

- **JBSSPI-Logfiles** – Contains policies that monitor the information logged in the JBoss Application Server log file and generates messages based on the information.
- **JBSSPI-Metrics** – Contains metric policies that monitor the performance levels and availability of a JBoss Application Server.

Each metric policy determines the threshold conditions for the monitored metric, the message text that is sent to the HPOM message browser when the threshold is exceeded, the actions to execute, and instructions that appear.

- **JBSSPI-Monitors** – Contains collector policies that specify the collection interval of metric policies. Within the name of each collector policy is its collection interval.

Each collector policy controls when and what metrics are collected. The collector policy performs the following actions:

- Runs the collector or analyzer at each collection interval
- Specifies which metrics are collected


For more information on policies, see *HP Operations Smart Plug-in for JBoss Application Server Reference Guide*.

Basic Policy Customizations

This section covers basic policy customizations like modifying metric policies and alarm generation.

Modifying Monitor Policies

To modify the metric attributes for a metric policy, follow these steps:

- 1 Open the Policy Bank window.
- 2 Click **SPI for JBoss Application Server** → **JBSSPI** → **JBSSPI-Metrics** policy group.
- 3 Select a metric and click **Edit** from the drop-down list .

The Edit Measurement_Threshold Policy “Metric Name” window opens.



The screenshot shows a web-based configuration window titled "Edit Measurement_Threshold Policy 'JBSSPI_0001'". The window has a tabbed interface with five tabs: "Properties", "Source", "Message Defaults", "Thresholds", and "Options". The "Properties" tab is currently selected. The form contains the following fields:

- Name:** A text input field containing "JBSSPI_0001" with a red asterisk and a help icon.
- Type:** A dropdown menu showing "advmonitor" with a red asterisk.
- Version:** A text input field containing "7.0" and a dropdown menu set to "Auto-increment on save".
- Description:** A large text area containing "JBoss Server Status" with a red asterisk and a help icon.
- Information:** A large text area that is currently empty with a help icon.

- 4 Click the **Thresholds** tab.

- 5 Click the condition you want to modify.

- 6 Click the different tabs (**Threshold**, **Start Actions**, **Continue Actions**, and **End Actions**) and modify the attributes. See [Table 3](#) for a list of attributes that you can modify.
- 7 Click **Save** to save the changes.
- 8 Deploy the modified policy as described in [Deploy the JBoss AS SPI Policies](#) on page 35.

Table 3 Metric Attributes

Attributes	Description
Threshold	Enter a value for the metric data that when exceeded, would signify a problem either about to occur or already occurring.
Duration	Enter a value for the length of time that the incoming data values for a metric can exceed the established threshold before an alarm is generated.
Severity	Click the Start Actions tab and then the Message tab. Select the desired severity setting from the Severity drop-down list.
Message Text	Be careful not to modify any of the parameters that are enclosed within <> brackets and beginning with \$, in a message.

Advanced Policy Customizations



Advanced policy customizations range from making copies of default policy groups in order to customize a few settings, to deleting whole groups of metrics within a policy's command line.

Choosing Metrics to Customize

Determine which metrics you want to customize and what policies within the group you want to use.

To customize the metrics follow these steps:

- 1 Open the **Policy Bank** window and click SPI for JBoss Application Server.

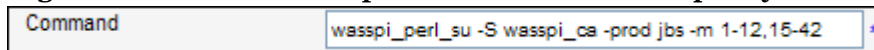
- 2 Select the policy group you want to use and click **Copy...** from the drop-down list . The Copy Policy Group window opens.
- 3 Rename the group, select the parent group and click **Save** to save.
- 4 Within the renamed policy group, copy each original policy and rename the policy (follow the steps 2 and 3).
- 5 Delete the original policies within the renamed policy group by selecting **Delete...** from the **Choose an Action** drop-down list and clicking  to submit.
- 6 Customize the renamed policies within the group as necessary.

Creating a new policy group enables you to keep custom policies separate from the original default policies, which you copy and place within the new group.

Using the JBoss AS SPI Collector/Analyzer Command with Parameters

The `wasspi_perl_su -S wasspi_ca -prod jbs` command is used in every collector policy. The collector policy is named according to its collection interval. You can view the default command line parameters in the Edit Scheduled_Task Policy “Policy name” window under the **Scheduled Task** tab within the Command text box. To open the Edit Scheduled_Task Policy “Policy name” window, select the collector policy and click **Edit...** from the drop-down list.

Figure 9 Command line parameters in collector policy



JBoss Application Server Command Parameters

The `wasspi_ca` command is required to start the JBoss AS SPI data collections. You can add other parameters to this command. The following table lists the parameters used by the default collector policies.

Table 4 List of JBoss Application Server Command Parameters

Parameter	Description	Syntax with Example
-e (exclude)	Enables you to exclude specific servers. This option should not be used with -i option.	Syntax: -e <server_name> Example: -e server1,server4
-i (include)	Enables you to list specific servers to monitor. This option should not be used with -e option.	Syntax: -i <server_name> Example: -i server2,server3
-m (metric)	Specifies the metric numbers or number ranges on which to collect data.	Syntax: -m <metric_number,metric_number_range> Example: -m 1,3-6,9-11,17

Table 4 List of JBoss Application Server Command Parameters

Parameter	Description	Syntax with Example
-matchver (match version)	Specifies the exact JBoss Application Server version to monitor. This option should not be used with the -minver nor -maxver options. If no matching versions are found, the command does not run.	Syntax: -matchver <version_number> Example: -matchver 4.3
-maxver (maximum version)	Specifies the highest JBoss Application Server version to monitor. Use with -minver to specify a range of versions. If no versions are found, the command does not run.	Syntax: -maxver <version_number> Example: -matchver 4.3
-minver (minimum version)	Specifies the lowest JBoss Application Server version to monitor. Use with -maxver to specify a range of versions. If no matching versions are found, the command does not run.	Syntax: -minver <version_number> Example: -matchver 4.2
-prod	(production) Identifies the SPI(s) on which the command is run on the node.	Syntax: -prod <Name of the SPI>- Example: wasspi_perl -S wasspi_ca -prod jbs -m 10-13 -t DEV-
-x	Enables you to specify the following property and value: <ul style="list-style-type: none"> alarm: When off, overrides any alarming condition as set up in the metric policy. prefix: Default: JMXUDM_. Specify the prefix of the metric ID. print: When on, prints the metric name, instance name, and metric value to STDOUT in addition to any configured alarming or logging. graph: When off, prevents graphing function. 	Syntax: -x <property>=<property_value>\ Example: <pre>-x alarm=off -x prefix=SALES_ -x print=on -x graph=off</pre>

Examples


- To collect specific data on all configured servers:

```
wasspi_ca -prod jbs -m 10-13,25,26
```

- To collect data from specific servers only:
`wasspi_ca -prod jbs -m 245,246,260 -i all, production`
- To not collect data from specific servers:
`wasspi_ca -prod jbs -m 220-223 -e all,production`


Changing the Collection Interval for All Monitored Metrics


To change the metric collection interval, simply change the Polling Interval in the appropriate collector policy. For example, to change the collection of default metrics from 5 minutes to 10 minutes for the JBSSPI-Monitors policy group, follow these steps:

- 1 Open the Policy Bank window and click SPI for JBoss Application Server policy group.
- 2 Click **JBSSPI** → **JBSSPI-Monitors**.
- 3 Select the collector policy JBSSPI-05 min and click **Edit...** from the drop-down list  .
The Edit Scheduled_Task Policy “JBSSPI-05min” window opens.
- 4 Change the Name to JBSSPI-10min and the description accordingly.
- 5 Click the **Scheduled Task** tab.
- 6 In the Minute box, change the polling interval from 5 minute to 10 minutes. For example, 0, 10, 20,....
- 7 Click the **Message Failed** tab.
- 8 Change the message text and Object.
- 9 Click **Save**.
- 10 Distribute the new policies (described in [Deploy the JBoss AS SPI Policies](#) on page 35).

Changing the Collection Interval for Selected Metrics

To change the collection interval for selected metrics, copy the appropriate collector policy. Rename the policy with a name reflecting the new interval, deleting all but the metrics you are changing. Set the new interval. Edit the original policy to remove the changing metrics. For example, to change the collection interval to 10 minutes for metrics 5-8, follow these steps:

- 1 Open the Policy Bank window and click SPI for JBoss Application Server policy group.
- 2 Click **JBSSPI** → **JBSSPI-Monitors**.
- 3 Select the policy JBSSPI-05min and click **Copy...** from the drop-down list  .
The Copy Policy JBSSPI-05min window opens.
- 4 Change the Name to JBSSPI-10min and the description accordingly.
- 5 Click the **Scheduled Task** tab.
- 6 In the Command text box, delete all metrics after the `-m` except 5-8.
- 7 In the Minute box, change the polling interval from 5 minute to 10 minutes. For example, 0, 10, 20....
- 8 Click **Save** to save the changes.
- 9 In the JBSSPI-Monitor policy group, select the JBSSPI-05min policy.

- 10 Click **Edit...** from the drop-down list  .
The Edit Scheduled_Task Policy “JBSSPI-05min” window opens.
- 11 Click the **Scheduled Task** tab and delete 5-8 from the Command text box.
- 12 Click **Save** to save the changes.
- 13 Redistribute the modified policies as described in [Deploy the JBoss AS SPI Policies](#) on page 35.

Policy Variables

If you are creating your own JBoss AS SPI policies, you can use the following variables. These variables are used by the JBoss AS SPI policies.

Table 5 Policy Variables for the JBoss AS SPI

Name	Description
instancename	The instance for which the metric is being reported for multi-instance metrics.
map_port	See port. This variable could be deprecated in future releases.
map_servername	The application server name with spaces replaced with underscores (“_”). Used for service map keys where spaces are prohibited. Example: production
node	The node on which the application server is running. Example: node1.hp.com
port	The port on which the application server is listening. Corresponds to the PORT configuration property. Example: 1090
servername	The application server name. Corresponds to the NAME configuration property. Example: production

Monitoring a JBoss Server on Unsupported Platforms

The JBoss SPI supports monitoring JBoss nodes running on HP-UX, Solaris, Linux, AIX, and Windows. However, it is possible to configure the JBoss SPI to monitor JBoss nodes running on unsupported platforms, in other words, “remote nodes.”

The remote monitoring feature enables JBSSPI to monitor a JBoss server instance hosted on an unsupported platform. The node hosting such a foreign platform is called a “remote node”. In order to discover, configure and monitor a remote node, JBSSPI employs an intermediate node called as “proxy node”.

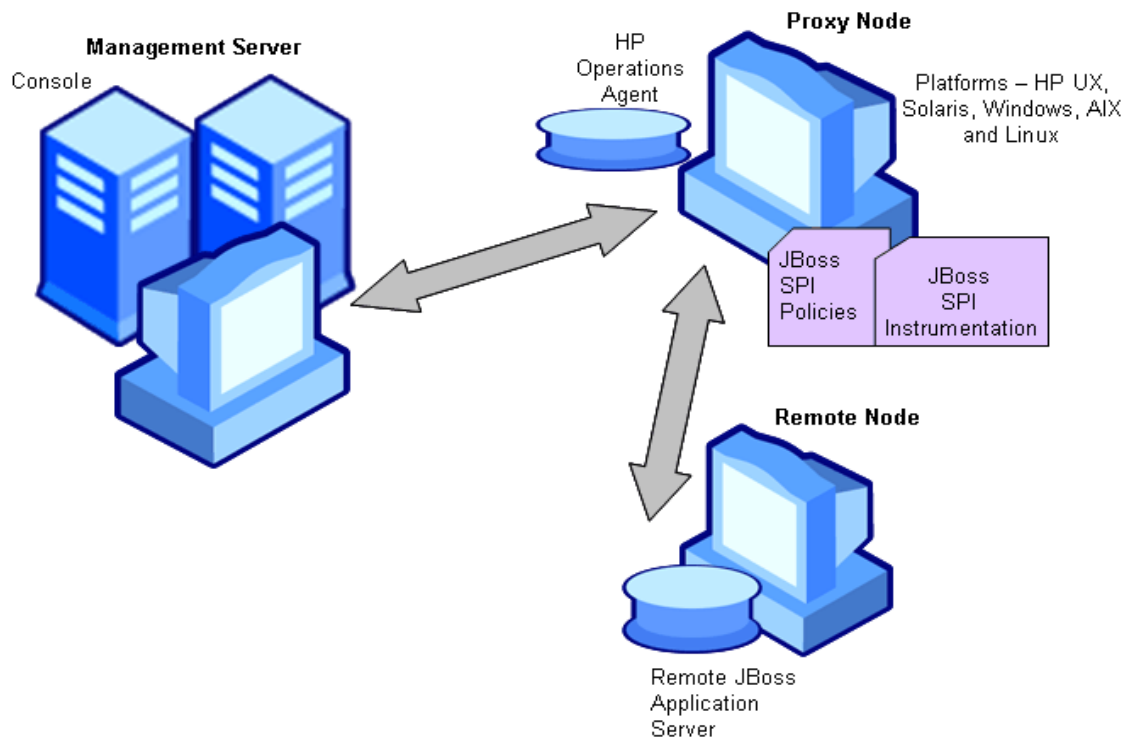
A proxy node *must* have JBSSPI supported platforms. The proxy node should be attached to the management server as the JBSSPI connects to remote JBoss server instance through the proxy node. The management server can act as a proxy node. The management server need not be aware of the remote node, however, the remote node *must* be reachable from the proxy node.

Requirements for Monitoring Remote Nodes

For a JBoss Server node running on an unsupported platform, you can use the JBSSPI to monitor that remote node if the following conditions apply:

- The JBoss SPI runs on at least one managed node on a supported platform: HP-UX, Solaris, Linux, AIX, or Windows.
- (Optional, for JBoss Server logfile monitoring) The remote node runs on a platform supported by the HP Operations agent software.

Figure 10 Remote Monitoring - JBoss Application Server
Remote Monitoring



Remote Monitoring

The following section provides an overview of remote monitoring and how to implement it. It also includes details on how to set up the JBoss SPI to access JBoss Server metrics and logfiles on unsupported platforms by using the JBoss SPI.

In a standard configuration, the JBoss SPI programs/policies are deployed on the managed node. In a non-standard configuration, the JBoss SPI programs/policies are deployed only on the proxy node through which Remote JBoss EAP metric information becomes accessible.

Policy deployment requirement: You can deploy policies and instrumentation only on the proxy node.

HP Operations agent deployment requirement (optional logfile monitoring): To access remote JBoss Server logfiles, the HP Operations agent software must be installed on the remote node. Using standard HPOM processes, you can modify the standard logfile policies included with the JBoss SPI to specify the correct logfile paths, and then deploy them to the remote node.

Configuring Remote Node Monitoring

You can monitor a JBoss Server on remote nodes (running on platforms other than HP-UX, Solaris, Linux, AIX, or Windows) by completing the following tasks.

Configuration Prerequisites

The following are required for JBoss remote monitoring.

Table 6 Software Configuration Management for JBoss Remote Monitoring

Node Type	JBoss EAP	JBSSPI	Agent	JDK
Proxy	No	Yes	Yes	Yes
Remote	Yes	No	No	N/A

The HP Operations agent will be required on the remote node to monitor the JBoss EAP log files.

Connection Prerequisite

Bind the running JBoss EAP configuration to either the IP or FQHN of the remote node using the **-b** option.

E.g. `<JBOSS_HOME>/bin/run.sh -c all -b 12.345.67.89`

File and Directory Content

The following files and directory content needs to be copied from the remote node without any modification/alteration to the proxy node, as the proxy node need not host JBoss EAP.

Table 7 Directories

Remote Location	<code><JBOSS_HOME>/server/<configuration>/deploy/jmx-remoting.sar</code>
Proxy Location	<code><JBOSS_HOME>/server/<configuration>/deploy/jmx-remoting.sar</code>

Table 8 File locations for JBoss EAP 4.x

Remote Location	<ul style="list-style-type: none"> <code><JBOSS_HOME>/server/<configuration>/lib/jboss-jsr77.jar</code> <code><JBOSS_HOME>/server/<configuration>/lib/jboss-management.jar</code>
Proxy Location	<ul style="list-style-type: none"> <code><JBOSS_HOME>/server/<configuration>/lib/jboss-jsr77.jar</code> <code><JBOSS_HOME>/server/<configuration>/lib/jboss-management.jar</code>




Table 9 File locations for JBoss EAP 5.0

Remote Location	<ul style="list-style-type: none"> <code><JBOSS_HOME>/common/lib/jboss-jsr77.jar</code> <code><JBOSS_HOME>/common/lib/jboss-management.jar</code>
Proxy Location	<ul style="list-style-type: none"> <code><JBOSS_HOME>/common/lib/jboss-jsr77.jar</code> <code><JBOSS_HOME>/common/lib/jboss-management.jar</code>

- ▶ <JBOSS_HOME> on the proxy node need not be same as that on the remote node.
- ▶ <configuration> on the proxy node *must* be same as that on the remote node.

Configure the Remote JBoss Node

Using the Discover or Configure JBSSPI tool in the SPI Admin tools group, configure each proxy node that communicates with a remote JBoss Server. In the configuration, include additional entries for remote JBoss Servers.

- 1 Create the directories, and copy content (for file names and location, see [Directories](#) on page 56, [File locations for JBoss EAP 4.x](#) on page 56 and [File locations for JBoss EAP 5.0](#) on page 56) from the remote node to the proxy node.
- 2 On the management server, open the All Node Groups window and select the JBoss Node Group.
- 3 Select **Assign Nodes...** from the **Choose an Action** drop-down list and click  to submit. The selector window opens. Click **All Nodes**.
- 4 Select the nodes running the JBoss Application Server and click **OK**. Nodes will be added to the JBOSS Node Group.
- 5 Open the Node Bank window and select the managed nodes.
- 6 Select **Assign Categories...** from the **Choose an Action** drop-down list and click  to submit. The selector window opens.
- 7 Select the **JBoss**, **JBSSPI Discovery** (optional), **JMX**, **SHS_Data_Collector**, and **SPIDataCollector** categories and click **OK**. Instrumentation categories are assigned to the managed node.
- 8 Open the Node Bank window and select the proxy node.
- 9 Select **Deploy Configuration...** from the **Choose an Action** drop-down list and click  to submit.
- 10 Select **Distribute Instrumentation** by selecting the corresponding check box. Click **OK**. Instrumentation will be deployed on the proxy node.
- 11 Run discovery on the proxy node (for information on how to run discovery, see [Launch Discover Tool](#) on page 32).

▶ Specify proxy node's <JAVA_HOME> during discovery.

- 12 Right-click on the proxy node and select **Start** → **SPI for JBOSS** → **SPI Admin** → **Discover or Configure JBSSPI**. The Tool Selector window appears.
- 13 Select **Launch Configure Tool** button and click **OK**. The Configuration Editor appears.
- 14 Right-click on the node and select **Add Application Server**. The Configure JBSSPI tool: Add App Server window appears.
- 15 Enter the running JBoss configuration. For example: **production**.
- 16 Enter the port number specified in the `jboss-service.xml` present in the following directory:

```
<JBOSS_HOME>/server/<configuration>/deploy/jmx-remoting.sar/META-INF.
```

- 17 Set the configuration properties by selecting the property from the **Select a Property to Set...** drop-down list, click **Set Property**, and set the value for the property.

In the configuration that appears, include an entry for each remote JBOSS node: LOGIN, PASSWORD, ADDRESS, JBOSS_HOME_LIST and JAVA_HOME. The values for LOGIN, PASSWORD and ADDRESS must be of the remote node and the values for JBOSS_HOME_LIST, JAVA_HOME must be of the proxy node.

For example:

```
SERVER1_ADDRESS=12.345.67.890
SERVER1_JBOSS_HOME_LIST=/usr/local/JBoss/AppServer
SERVER1_JAVA_HOME=/usr/local/JBoss/AppServer
SERVER1_LOGIN=admin
SERVER1_NAME=dmgr
SERVER1_PASSWORD=admin
SERVER1_PORT=8809
```

- 18 Select **Save** to save any changes made to the configuration. After you save the changes, you cannot undo the changes automatically.
- 19 Click **Next**, select the proxy node and click **OK**.
- 20 Select **Finish** to exit the editor.

▶ If you click **Cancel**, the changes made by you are not saved to the selected managed nodes' configuration and remain in the configuration on the management server.

After the configuration is successful, run discovery on the proxy node (see [Launch Discover Tool](#) on page 32) and verify the discovery process (see [Verify the Discovery Process](#) on page 34).

- 21 Deploy the desired monitor and scheduled policies on the proxy node.

▶ Do not deploy the JBoss Server Log Monitor policy on the proxy node.

Configuring Remote Logfile Monitoring (Optional)

Monitoring remote node logfiles is supported if both the following are true:


- The remote node has an HP Operations agent running on it.
- The node does not re-version logfiles when they roll.

To set up logfile monitoring at the HPOM console, copy the JBoss Server Log Monitor policy and then configure, assign, and deploy the copied logfile policy on the remote node.

Configure the Logfile Policy for Remote Logfiles

You cannot monitor the JBoss EAP logs through the proxy node by default. To configure the remote JBoss EAP logs, follow these steps:

- 1 Install the HP Operations agent on the remote node, if not installed already (for more information on installing the HP Operations agent, see
- 2 Modify the JBoss Server Log Monitor policy to contain absolute log file path. For example - **SPI for JBoss Application Server** → **JBSSPI** → **JBSSPI-Logfiles**.

- 3 Click **Edit...** from the drop-down list which appears when you click . The Edit LogFile_EntryPolicy “JBoss Server Log Monitor” window appears.
- 4 Click the **Source** tab and in the **Logfile** text box, enter the location of the logfile on the remote node: `/<path>/<file_name>`.
- 5 Assign and deploy the JBS Server Log Monitor policy to the remote node.

Monitoring JBSSPI logs

JBSSPI logs are filled on the proxy node, so deploy JBSSPI Java Collector Error Log, JBSSPI Error Log and JBSSPI Java Discovery Error Log policies directly to the proxy node.

Limitations of Remote Monitoring

The limitations of remote monitoring are as follows:

- When no HP Operations agent is present on the remote node, monitoring of JBoss Server logfiles on the remote node cannot occur.
- In the HPOM Tool Bank, the JBoss Server Admin tools cannot be executed on remote nodes.
- All alerts sent to the management console show that the problem has occurred on the proxy node instead of the remote node.
- Remote nodes with the same server name cannot be discovered, configured and monitored by the proxy node. In such a case, all discovered data on the proxy node will be lost.

6 Integrating the JBoss AS SPI with HP Graphing Solutions

This chapter provides information on the integration of the JBoss AS SPI with different HP graphing products which help in performance and analyzing the trend.

Using Graphs

The JBoss AS SPI can be integrated with the following HP graphing products (these products must be purchased separately):

- **HP Performance Agent:** HP Performance Agent collects, summarizes, time stamps, and detects alarm conditions on current and historical resource data across your system. HP Performance Agent provides performance, resource, and end-to-end transaction response time measurements, and supports network and database measurement information. See the *HP Performance Agent for UNIX User's Manual* for more information about HP Performance Agent. If you are using HP Performance Agent, the JBoss AS SPI automatically uses HP Performance Agent. If you want to use the HP Operations subagent—CODA that is included with HPOM (does not support HP Performance Agent), you must configure your managed nodes to do so. See *HP Performance Agent for UNIX Users Guide* for more information.
- **HP Performance Manager:** HP Performance Manager is a web-based analysis tool that helps you to evaluate system performance, look at usage trends, and compare performance between systems. You can create graphs using the JBoss AS SPI metrics on integrating with the HP Performance Manager. This is not the version of HP Performance Manager that is included with HPOM. For more information on how to integrate the JBoss AS SPI with HP Performance Manager, see [Integrating with HP Performance Manager](#) on page 61. After integrating the JBoss AS SPI with HP Performance Manager, graphs are available the following day.

JBoss AS SPI Graphs

Metrics collected by the JBoss AS SPI can be used to create graphs. The values can then be viewed for analyzing the trend. You can integrate the JBoss AS SPI with HP Performance Manager to generate and view graphs. These graphs show the values of the metrics collected by the JBoss AS SPI.

Integrating with HP Performance Manager

To integrate the JBoss AS SPI with HP Performance Manager, follow these steps:

- 1 Install and configure the JBoss AS SPI.

2 Install the graph package.

On a Windows system running HP Performance Manager, follow these steps:

- a Insert the Smart Plug-ins DVD-ROM (that contains the graphing packages) into the DVD-ROM drive, and in Windows Explorer, double-click `\WINDOWS\IOV_PM\JBoss_SPI\HPOvSpiJbsGc.msi`.
- b Follow the instructions as they appear.

On an HP-UX system running HP Performance Manager which is not the HPOM management server, follow the step (if HP Performance Manager is installed on the HPOM management server, the files are already swinstalled when you install the SPI software):

- Mount the Smart Plug-ins DVD-ROM (that contains the graphing packages) and type:

```
swinstall -s <mount_point>/HPUX/  
HP_Operations_Smart_Plug-ins_HPUX.depot JBSSPI-GRAPHS
```

On a Solaris system running HP Performance Manager which is not the HPOM management server, follow the step (if HP Performance Manager is installed on the HPOM management server, the files are already installed when you install the SPI software):

- Mount the Smart Plug-ins DVD-ROM (that contains the graphing packages) and type:

```
/usr/sbin/pkgadd -d <mount_point>/SOLARIS/  
HP_Operations_Smart_Plug-ins_SOLARIS.sparc HPOvSpiJbsG
```

3 To create graphs using JBoss AS metric, use the data source name `JBSSPI_METRICS`.

For information on how to view the graphs, see the HP Performance Manager documentation. Graphs are available the day following integration.

Viewing Graphs that Show Alarm Conditions

For graphing purposes, the JBoss AS SPI organizes metrics according to type. When a message is generated for any metric (listed in the *HP Operations Smart Plug-in for JBoss Application Server Reference Guide*), you can view a chart of that metric along with other metric values.

To view a graph associated with an alarm condition (operator-initiated action has been defined with the JBoss AS SPI policy), follow these steps:

- 1 In the HPOM message browser, double-click the message for which you want to view the graph.

The Message Properties window opens.

- 2 Click the **Actions** tab.

- 3 Click **Perform** in the section Operator Initiated to start the operator-initiated command.

The operator action launches your web browser, where you can view the graph.

Viewing Graphs from the HP Performance Manager Console

If you did not install HP Performance Manager on the same system as HPOM management server, you can view the JBoss AS SPI Graphs from the HP Performance Manager console. Follow these steps:

- 1 Click **Start** → **All Programs** → **HP** → **HP BTO Software** → **Performance Manager** → **Performance Manager**.

The Performance Manager console opens.

- 2 From the Select Nodes pane, select the node for which you want to see graph. If the node is not listed in the list, add the node:

- a Click **Admin** in the menu bar.

The Manage Nodes window opens.

- b Click the **Add a Node**  icon.

The Add a Node window opens.

- c Type the node name and click **Add**.

- d Click **Home** on the menu bar.

- 3 From the Select a Graph pane, select **SPI for JBoss Application Server**.

- 4 Select the graph you want to view and click **Draw**.

7 Troubleshooting

This chapter provides information on basic troubleshooting and overview on error messages for the JBoss AS SPI.

Self-Healing Info Tool

The Self-Healing Info tool gathers SPI troubleshooting data and stores the data in a file that you can submit to HP support for assistance. For more information about using this tool, see [Self-Healing Info](#) on page 43.

- ▶ The file created by the Self-Healing Info tool might be hidden on some Windows managed nodes. If you do not see the file, open Windows Explorer and, from the **Tools** menu, select **Folder Options**. Click the **View** tab. Under Hidden files and folders, select **Show hidden files and folders**.

Logging

This section discusses the files required for logging on the management server and managed nodes and their respective locations.

Management Server

The following log file is found on the management server (typically, `/<%OvInstallDir%>/opt/OV`)

File Type	Log
Filename	<code>/<%OvInstallDir%>/WASSPI/jbs/log/<managed_node>_disc_server.log</code>
Description	Records the updates done by the JBSSPI Service Discovery policy to the management server's configuration for each managed node. Log files are overwritten each time the discovery policy is run on the managed node. Logging to this file is always enabled.

Managed Nodes

The following files for logging are found on the managed nodes running on UNIX or Windows (typically, `<Agent_Dir>/is/var/opt/OV/` for UNIX and `\Documents and Settings\All Users\Application Data\HP\HP BTO Software\` for Windows):

Directory	<code><Agent_Dir>/wasspi/jbs/log/wasspi_perl.log</code> (archived files have a one digit number appended to the filename)
Description	File used by your HP support representative for debugging. This file gives you information about the Perl logging (configuration, discovery, and collection). By default, you can only view the error messages. To view all types of messages (info, warn, and error), run the Start Tracing tool. To stop the tracing, run the Stop Tracing tool. For more information on how to run these tools, see Start Tracing on page 43 and Stop Tracing on page 44. Three archived versions of the size 10 MB are kept.
Directory	<code><Agent_Dir>/wasspi/jbs/log/Discovery.log</code> (archived files have a one digit number appended to the filename)
Description	File used by your HP support representative for debugging. This file gives you information about the Java discovery logging. By default, you can only view the error messages. To view all types of messages (info, warn, and error), run the Start Tracing tool. To stop the tracing, run the Stop Tracing tool. For more information on how to run these tools, see Start Tracing on page 43 and Stop Tracing on page 44. Three archived versions of the size 10 MB are kept.
Directory	<code><Agent_Dir>/wasspi/jbs/log/Collector.log</code> (archived files have a one digit number appended to the filename)
Description	File used by your HP support representative for debugging. This file gives you information about the Java Collector logging for the CollectorServer. By default, you can only view the error messages. To view all types of messages (info, warn, and error), run the Start Tracing tool. To stop the tracing, run the Stop Tracing tool. For more information on how to run these tools, see Start Tracing on page 43 and Stop Tracing on page 44. Three archived versions of the size 10 MB are kept.

Directory	<Agent_Dir>/wasspi/jbs/log/CollectorClient.log (archived files have a one digit number appended to the filename)
Description	File used by your HP support representative for debugging. This file gives you information about the Java Collector logging for the CollectorClient. By default, you can only view the error messages. To view all types of messages (info, warn, and error), run the Start Tracing tool. To stop the tracing, run the Stop Tracing tool. For more information on how to run these tools, see Start Tracing on page 43 and Stop Tracing on page 44. Three archived versions of the size 10 MB are kept.

Troubleshooting Discovery Process

Problem	On launching the Discover or Configure JBSSPI tool, NoClassDefinitionFoundError message appears in the Tool Output window.
Solution	Deploy the JMX and JBoss instrumentation categories on the node.
Problem	On completing the discovery, the success message appears in the message browser but the service map for JBoss is empty.
Solution	<ul style="list-style-type: none"> • Make sure that the instance(s) of JBoss EAP are running on the node. • Verify that you have entered the correct value for JBOSS_HOME_LIST in the configuration editor.
Problem	On completing the discovery, the success message appears in the message browser but the service map does not appear.
Solution	<ul style="list-style-type: none"> • Publish the service XML by running the <code>agtrep -publish</code> command on the node. • Verify whether the JMX and JBoss instrumentation categories are deployed on the node. If no, deploy the JMX and JBoss instrumentation categories on the node and run the discovery.

Problem	The instance(s) of JBoss EAP are running and all the required instrumentation is deployed but the discovery is still failing.
Solution	<ul style="list-style-type: none"> • Verify that the <code>jmx-remoting.sar</code> is copied to the <code>deploy</code> directory of all the running instances of JBoss EAP. • If the running instance of JBoss EAP is bound to an IP address or hostname using <code>-b</code> option, refer step 8 in Launch Discover Tool on page 32.

Problem	The discovery is successful even if you have entered the incorrect LOGIN and PASSWORD.
Solution	This is a limitation with JSR-160 implementation of JBoss Inc.

Problem	<p>In the SiteConfig file for Windows managed nodes, the value for <code>JBOSS_HOME_LIST</code> and <code>JAVA_HOME</code> appears as:</p> <pre>JBOSS_HOME_LIST=CProgramFilesEnterprisePlatform-4.3.0.GA_CP06jboss-as JAVA_HOME=CProgram FilesJavajdk1.5.0_16</pre> <p>The "\" character is removed from the path.</p>
Solution	<p>Replace the character "\" with "/" or "\\\" in the path for <code>JBOSS_HOME_LIST</code> and <code>JAVA_HOME</code>.</p> <p>For example:</p> <pre>JBOSS_HOME_LIST=C:/Program Files/EnterprisePlatform-4.3.0.GA_CP06/jboss-as</pre> <p>Or</p> <pre>JBOSS_HOME_LIST=C:\\ProgramFiles\\EnterprisePlatform-4.3.0.GA_CP06\\jboss-as</pre>

Problem	The JBSSPI Discovery policy does not automatically discover and update the JBoss AS SPI configuration.
Solution	<ol style="list-style-type: none"> 1 Verify that the Discover or Configure JBSSPI tool is not running or a configuration is not open in the configuration editor. Only one process can access a configuration at a time. If a configuration is open, other processes that must access that file (like the discovery policy) hang until the file becomes available. 2 Check for any error in the message browser for the managed nodes which have not been discovered. Follow the instruction text of any error messages displayed. 3 Check for errors in the <code><Agent_Dir>/wasspi/jbs/log/wasspi_perl.log</code> and <code><Agent_Dir>/wasspi/jbs/log/Discovery.log</code> file on the managed node. 4 If there are multiple instances of <code>JBOSS_HOME</code> on the managed node, set the <code>JBOSS_HOME_LIST</code> property correctly in the configuration editor. 5 Check if the JBSSPI Discovery policies are being deployed. 6 If the state of a JBSSPI Discovery policy is Active, the policy is still being deployed. Wait for the deployment of the policy to complete. 7 If the state of a JBSSPI Discovery policy is Suspended or Error, then check for any error messages in the message browser and continue to troubleshoot the problem by reading the rest of this section. 8 If the JBSSPI Discovery policies are not listed, check the message browser for the following message: <code>JBSSPI-131: JBoss Discovery is Successful</code>. If this message is present, the JBSSPI Discovery policies are successfully deployed. If this message is not present, the policies were not successfully deployed. Continue to troubleshoot the problem by reading the rest of this section. 9 Verify that an instance of JBoss EAP is installed on the managed node. If the JBoss AS is not installed, uninstall the JBSSPI Discovery policy group from the managed node, install an application server, and perform the steps for configuring the JBoss AS SPI in Chapter 3, Configuring the JBoss AS SPI. 10 Verify the status of the JBoss Application Server. The application server must be running. 11 Verify that the discovery agent is running on the managed node: <ol style="list-style-type: none"> a Run the command <code>opcagt -status</code>. b Search for the following message: <code>Service Discovery Agent OvSvcDiscAgent.cmd (1084) is Running</code>. <p>If the agent is not running, start it by running the command <code>opcagt -start -id 13</code>.</p>

Troubleshooting Configuration

Problem	JBSSPI configuration does not write complete or accurate information on the managed node.
Solution	<ul style="list-style-type: none">• Verify if the discovery was successful for this node.• Verify if the SPIDataCollector instrumentation category was deployed on this node.
Problem	The message: JBoss Server is not running is appearing in the message browser but the server is running.
Solution	Run the Verify tool to check if there are any missing files on the node.

Troubleshooting Collection

Problem	Following message is appearing in the message browser repeatedly: JBSSPI: Task failed for "wasspi_perl_su -S wasspi_ca -prod jbs -m 1-12,15-42" and user "\$AGENT_USER". [Policy: JBSSPI-05min]
Solution	<ul style="list-style-type: none">• Make sure all the discovered instances of JBoss EAP are running.• Redeploy JBSSPI-05min scheduled policy to the node.• Check for errors in the files <code>Collector.log</code> and <code>CollectorClient.log</code> located in the <code><Agent_Dir>/wasspi/jbs/log/</code> directory.
Problem	No alarms are received for a metric
Solution	<ul style="list-style-type: none">• Verify that the monitor policy corresponding to the metric is deployed on the node.• Verify that alarm=yes is specified in the <code><Agent_Dir>/wasspi/jbs/conf/MetricDefinitions.xml</code> file for the metric.
Problem	On manually running the collector command on the managed node, the value of the metric is printed as <code>No instance, No data on STDOUT</code>
Solution	Check the JBoss JMX-Console for the presence of corresponding MBeans.

Problem	Data is not getting logged
Solution	<ul style="list-style-type: none"> • Verify that the SPIDataCollector instrumentation category is deployed on the managed node. This is required to create the datasource JBSSPI_METRICS. • Verify that the JBSSPI-Performance policy is deployed on the node. • Check if the <servername>.dat file is created in <Agent_Dir>/wasspi/jbs/datalog. • Check if the datasource JBSSPI_METRICS is created. • Verify that graph=yes is specified in the <Agent_Dir>/wasspi/jbs/conf/MetricDefinitions.xml for the metrics which are being monitored. Only the metrics which are specified as graph=yes in the MetricDefinitions.xml get logged. The default value is no.

Troubleshooting Tools

Problem	When launched, the JBoss Server Status tool gives incorrect or no output.
Solution	<ul style="list-style-type: none"> • Make sure all the discovered instances of JBoss EAP are running. • Verify that the configuration of the JBoss AS SPI is completed without any error(s).

Problem	When launched, the Start JBoss Server tool gives incorrect or no output.
Solution	<ul style="list-style-type: none"> • Make sure the values of JBOSS_HOME_LIST and JAVA_HOME are unchanged since last discovery. If these are changed, run Discovery and Configuration again. • Verify that the configuration of the JBoss AS SPI is completed without any error(s).

Problem	When the Start JBoss Server tool is launched, the message JBoss server started appears in the Tool Output window but the JBoss Application Server is not started.
Solution	<ul style="list-style-type: none"> • Make sure the values of JBOSS_HOME_LIST and JAVA_HOME are unchanged since last discovery. If these are changed, run Discovery and Configuration again. • Verify that the configuration of the JBoss AS SPI is completed without any error(s).

Problem	When launched, the Stop JBoss Server tool gives incorrect or no output.
Solution	<ul style="list-style-type: none"> • Make sure all the discovered instances of JBoss EAP are running. • Verify that the configuration of the JBoss AS SPI is completed without any error(s). • Verify that the LOGIN/PASSWORD entered during discovery and configuration are still valid. If not, run configuration again.

Problem	When launched, the View JBoss Logs tool gives incorrect or no output.
Solution	<ul style="list-style-type: none"> • Make sure the values of JBOSS_HOME_LIST and JAVA_HOME are unchanged since last discovery. If these are changed, run Discovery and Configuration again. • Verify that the configuration of the JBoss AS SPI is completed without any error(s).

Problem	When launched, the Self-Healing Info tool gives improper output.
Solution	<ul style="list-style-type: none"> • Make sure SHS_Data_Collector instrumentation category is deployed on the node. • Run the Verify tool to check for missing files (if any). • Verify that the configuration of the JBoss AS SPI is completed without any error(s).

Problem	When launched, the Start/Stop Monitoring tool gives improper output.
Solution	Verify that the configuration of the JBoss AS SPI is completed without any error(s).

Problem	When launched, the Start/Stop Tracing tool gives improper output.
Solution	Verify that the configuration of the JBoss AS SPI is completed without any error(s).

Problem	When launched, the Verify tool gives improper output.
Solution	<ul style="list-style-type: none"> • Make sure SHS_Data_Collector instrumentation category is deployed on the node. • Verify that the configuration of the JBoss AS SPI is completed without any error(s).

Troubleshooting Miscellaneous

Problem	Unexpected categories get created on installation of the SPI.
Solution	You can ignore these categories such as JBSSPI Discovery.

Overview of Error Messages

The JBoss AS SPI error messages contains the following information:

- Error Message Number
- Description
- Severity
- Help Text (Probable Cause and Suggested Action)

Error messages can be viewed from the HPOM Message Browser. Double-click the error message to open the message. The Message Properties window opens. Click the Message Text tab to view the error message.

For more information on error messages, see *HP Operations Smart Plug-in for JBoss Application Server Reference Guide*.

8 Removing the JBoss AS SPI

Removing the SPI through the Graphical User Interface from Linux Management Server

To remove the JBoss AS SPI using X-Windows client software, perform the following steps:

- 1 Login as a **root** user.
- 2 Insert the HP Operations Smart Plug-ins DVD into the DVD drive of the Linux management server. Mount the DVD if necessary.
- 3 Start the X-windows client software and export the DISPLAY variable by typing the following command:

```
export DISPLAY=<ip address>:0.0
```

- 4 To start the removal of the SPI, type the following command:

```
./HP_Operations_Smart_Plug-ins_Linux_setup.bin
```

The introductory window opens.

- 5 Select the language from the drop-down list and click **OK**.

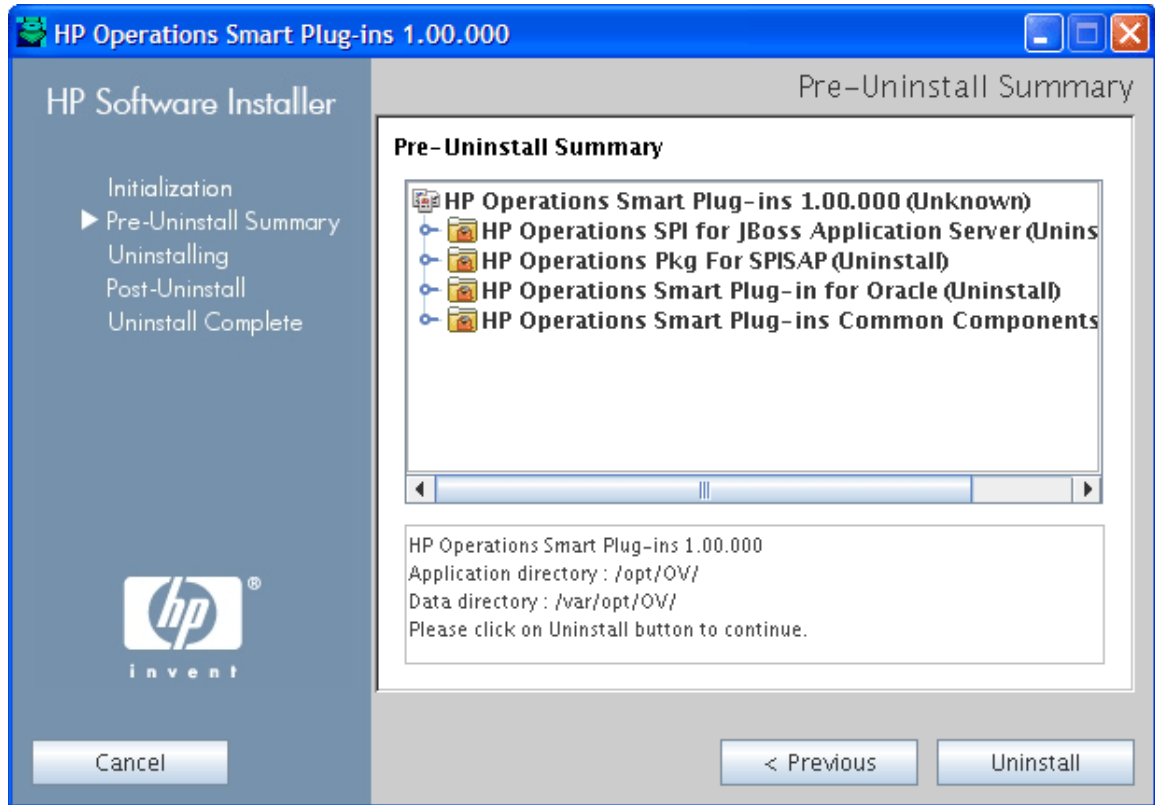
The Application Maintenance window opens.

- 6 Select **Uninstall** radio button and click **Next**.



When you have two SPIs installed on the Linux management server and you want to remove one SPI out of the two installed SPIs, select Modify option and then the SPI you want to retain. Do not select the SPI which you want to remove.

The Pre-Uninstall Summary window opens.



- 7 Click **Uninstall**.

The Uninstall window opens. The Uninstall Complete window opens once the SPI is uninstalled.

- 8 Click **Done** to complete the removal of the SPI.

Removal of the SPI through the Command Line Interface from Linux Management Server

To remove the JBoss AS SPI through command line interface, perform the following steps:

- 1 Log on as a **root** user.
- 2 Insert the HP Operations Smart Plug-ins DVD into the DVD drive of the Linux management server. Mount the DVD if necessary.
- 3 To start the removal of the SPI, type the following command:

```
./HP_Operations_Smart_Plug-ins_Linux_setup.bin -i console
```
- 4 When the prompt, 'Choose Locale...' appears, press the number corresponding to the language you want to choose.
- 5 Press **Enter** to continue.

The Maintenance Selection screen appears.

6 Press the appropriate option (number) to start the removal of the SPI.



When you have two SPIs installed on the Linux management server and you want to remove one SPI out of the two installed SPIs, select Modify (1) option and then the SPI you want to retain. Do not select the SPI which you want to remove.

7 Press **Enter** to continue.

When the removal is complete, you will receive a message which states that the removal is completed successfully.

Removing the SPI components from HP-UX Management Server

To completely uninstall the SPI, remove the SPI components by completing the following tasks:

Remove the JBoss AS SPI Software from the Management Server


- 1 Open a terminal window and log on as root.
- 2 In the terminal window, enter the following:

For an HP-UX management server, type:

```
/usr/sbin/swremove JBSSPI
```

The **swremove** and **pkgrm** command removes the files from the software list, directories in `/var/opt/OV/share/databases/OpC/mgd_node/instrumentation/`, directories in `/opt/OV/wasspi/jbs`, node groups, categories, tools, and policies.

Delete the JBoss AS SPI Message Groups

- 1 Open the All Message Groups window.
- 2 Select JBoss and JBSSPI message groups by selecting the check box.
- 3 Select **Delete...** from the **Choose an Action** drop-down list and click  to submit.
The JBoss AS SPI message groups are deleted.

Removing the JBoss AS SPI in an HPOM Cluster Environment

Remove the JBoss AS SPI from each system in the cluster following the steps in [Removing the SPI components from HP-UX Management Server](#) on page 78.

A File Locations

The JBoss AS SPI configuration files and error logs are present in the following directories.

HPOM Management Server File Locations

Operating System	File	File Location
HP-UX and Linux	Configuration	/opt/OV/wasspi/jbs/conf

Managed Node File Locations

Operating System	File	File Location
HP-UX and Linux	Configuration	/var/opt/OV/wasspi/jbs/conf
HP-UX and Linux	Error Logs	/var/opt/OV/wasspi/jbs/log
AIX	Configuration	/usr/lpp/OV/wasspi/jbs/conf
AIX	Error Logs	/usr/lpp/OV/wasspi/jbs/log
Windows (HTTPS)	Configuration	\Documents and Settings\All Users\Application Data\HP\HP BTO Software\wasspi\jbs\conf
Windows (HTTPS)	Error Logs	\Documents and Settings\All Users\Application Data\HP\HP BTO Software\wasspi\jbs\log

B The Configuration

This appendix contains information about the configuration structure, how to use the configuration editor and descriptions of the configuration properties.

Structure

The basic structure of the configuration is (lines preceded by # are treated as comments and are ignored):

```
# Global Properties
<property>=<value> ...

# GROUP Block
GROUP <group_name>
{
  <node_name> ...
}

# NODE Block
NODE <node_name | group_name>
{
  <property>=<value> ...
}
```

Global Properties

```
# Global Properties
<property>=<value> ...
```

Properties defined at the global level apply to all nodes. However, these global properties can be overridden by properties set within a GROUP or NODE block or by server-specific properties.

GROUP Block

```
# GROUP Block
GROUP <group_name>
{
  <node_name> ...
}
```

GROUP blocks are used to group nodes that have common properties.

<group_name> identifies the group of nodes with common properties. If a GROUP block <group_name> is repeated within the configuration, the last definition takes precedence.

<node_name> lists the nodes in the group and is the primary node name configured in HPOM.



The node name specified in a GROUP block matches the value returned by the HPOM variable \$OPC_NODES, which is the primary node name configured in HPOM.

Set the common properties of the group using the NODE block.

Using the configuration editor, view, set, or edit GROUP block properties by selecting the Default Properties item in the <Group_Name> folder.

NODE Block

```
# NODE Block
NODE <node_name | group_name>
{
  <property>=<value> ...
}
```

Properties set in a NODE block apply to nodes that belong to the group defined by <group_name> (to set common properties for a group) or to the specified <node_name> (to set properties for a single node).

For a group, enter the <group_name> defined by the GROUP block and define the group's common properties.

For a single node, enter the <node_name> and define the properties.

If a property definition is repeated within the NODE block, the last definition takes precedence.

To view, set, or edit NODE block properties using the configuration editor, select the Default Properties item in the <Node_Name> folder.

Server-Specific Properties

Each property specified as *SERVER<n>_property* refers to a specific JBoss Application Server instance. When more than one JBoss Application Server instance is running on a given managed node, the number <n> differentiates the servers. Numbering begins at “1” and each JBoss Application Server instance is assigned a unique number.

Property Precedence

The order of precedence (highest to lowest) of properties defined in the configuration are:

- 1 SERVER<n>_property (server-specific)
- 2 NODE <node_name> {<property>} (property defined for a node)
- 3 NODE <group_name> {<property>} (property defined for a group)
- 4 <property> (global property)

The Configuration Editor

Use the configuration editor to view, set, and edit the configuration. You must update the configuration using this editor only.

The main features of the configuration editor are the following:

Discover or Configure JBSSPI - Tree

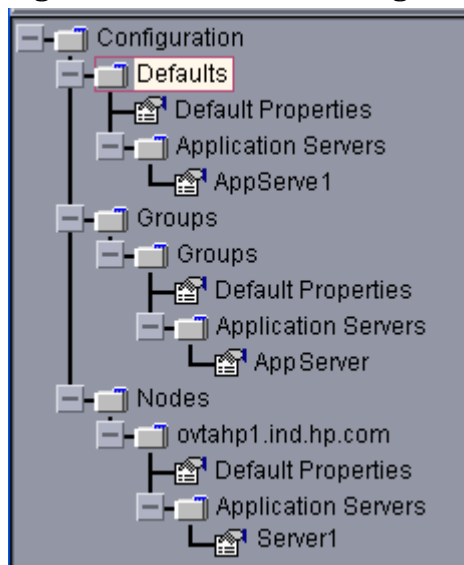
The Discover or Configure JBSSPI tree appears in the left pane of the Configuration Editor window. The tree shows the JBoss AS SPI configuration in a tree structure.

The following is an example of the tree:



If no application servers or groups are configured, the “Application Servers” and “Groups” folders are not displayed. If you are running the Discover or Configure JBSSPI tool for the first time and you have not selected any node before you launched the tool, the “Nodes” folder is not listed.

Figure 1 Discover or Configure JBSSPI tree



The icons are defined as follows:



The configuration properties can be viewed.



The configuration properties can be viewed and set.

The following table lists each item in the tree:

Table 1 Description of items in the Configuration tree

Item Name	Description
Application Servers	A folder that contains a list of all the application servers. This folder can appear under Defaults (global properties), Group_Names (GROUP block), or Node_Names (NODE block).
<Application_Server_Name>	The server name as defined in JBoss AS.
Configuration	A folder that contains all the JBoss AS SPI configuration information for the JBoss AS environment.
Default Properties	Lists the configuration properties that were set. This item appears under Defaults (global properties), Group_Names (GROUP block), or Node_Names (NODE block).
Defaults	A folder that represents the global properties. Default properties set at this level apply to all nodes. However, these properties can be overridden by properties set under the Group_Name and Node_Name folders (see Property Precedence on page 82).
Groups	A folder that represents the GROUP block.
<Group_Name>	A folder that identifies the name of a group of nodes with common properties. Default properties set at this level apply to all nodes that belong to the specified group. These properties can be overridden by properties set under the Node_Name folders (see Property Precedence on page 82).
Nodes	A folder that represents the NODE block.
<Node_Name>	A folder that represents a single node whose name matches the value returned by the HPOM variable \$OPC_NODES, which is the primary node name configured in HPOM. Default properties set at this level apply to the specified node only (see Property Precedence on page 82).

Discover or Configure JBSSPI - Buttons

The following buttons are available in Discover or Configure JBSSPI- Configuration Editor window:















Table 2 Buttons in the Configuration Editor

Button	Description
Cancel	Exit Discover or Configure JBSSPI. If you set configuration properties without saving them, these changes are not saved. If you added or removed an application server, node, or group without saving the change or if you modified a configuration property, a Confirm Cancel window appears. Click Save and Exit to save the changes before exiting, Exit without Save to exit without saving the changes, or Return to Editing to continue editing the configuration (changes are not saved).
Finish	Exit Discover or Configure JBSSPI and start configuring.
Save	Save changes to the HPOM management server's configuration and continue editing the configuration. You can also select File → Save to save your changes.

Discover or Configure JBSSPI - Actions

Actions that you can perform depend upon the item that is selected in the tree and from where you access the action. The following actions can be accessed from the Actions menu, File menu, or by right-clicking an item in the tree.

Table 3 Actions performed using Discover or Configure JBSSPI

Action	Description	Selected Tree Item
Add Application Server	Add an application server. See Add Application Server on page 86. This action is performed only during discovery and not during configuration.	 Application Servers  Defaults  <Group_Name>  <Node_Name>
Exit	Exit the Discover or Configure JBSSPI tool. This action is available from the File menu. If any changes were made that were not saved, the Confirm Cancel window appears.	 Any item in the tree  Any item in the tree
Remove Application Server/Remove ALL App Servers	Remove an application server or all listed application servers. See Remove Application Server/Remove ALL Servers on page 86.	 Application Servers  <Application_Server_Name>
Save	Save changes to the configuration. This action is available from the File menu only if changes were made to the configuration.	 Any item in the tree  Any item in the tree
Set Configuration Properties tab	Set the JBoss AS SPI configuration properties. See Set Configuration Settings Tab on page 87.	 <Application_Server_Name>  Default Properties
View Configuration Settings tab	View the JBoss AS SPI configuration properties. See View Current Configuration Tab on page 88.	 Any item in the tree  Any item in the tree

Add Application Server

Add an application server at the global properties, GROUP, or NODE level in the JBoss AS SPI configuration.



This action is performed only during discovery and not during configuration.

To add an application server, follow these steps:

- 1 Right-click one of the following items in the tree: Defaults (global properties level), Application Servers (global properties level), *<Group_Name>* (GROUP level), or *<Node_Name>* (NODE level) and select **Add Application Server**.

The Discover or Configure JBSSPI tool: Add App Server window appears.

- 2 Enter the name in the **Application Server Name** text field. This is the name of the application server as defined in JBoss AS and is case-sensitive.
- 3 Enter the port number in the **Application Server Port** text field.
- 4 Click **OK**.

The NAME and PORT properties are set.

The application server is added and its properties are displayed. You can also set additional configuration properties for this server. [Set Configuration Settings Tab](#) on page 87 for more information.

- 5 Click **Save** to save your changes.

If you do not want to add this application server, right-click the application server name, select **Remove Application Server**, and click **Save**.

Remove Application Server/Remove ALL Servers

Remove a JBoss Application Server or all listed JBoss Application Servers from the JBoss AS SPI configuration.

To remove an application server, follow these steps:

- 1 Right-click the application server name and select **Remove Application Server**.

The selected application server name is removed from the list and its configuration properties are removed from the configuration.

- 2 Click **Save** to permanently remove the application server.

Click **Cancel** to cancel the removal of the application server (the application server name appears the next time you run Discover or Configure JBSSPI). In the “Confirm Cancel” window, click **Exit without Save**.

To remove ALL application servers, follow these steps:

- 1 Right-click the Application Servers folder and select **Remove ALL Servers**.


The selected Application Servers folder and all application servers listed in the selected folder are removed (all configuration properties for the listed application servers are removed from the configuration).

- 2 Click **Save** to permanently remove the application servers.

Click **Cancel** to cancel the removal of all application servers (the Application Servers folder and all application server names listed in the folder appear the next time you run Discover or Configure JBSSPI). In the Confirm Cancel window, click **Exit without Save**.

Set Configuration Settings Tab

Set the JBoss AS SPI configuration properties at the global properties level or for the selected application servers, groups (GROUP level), or nodes (NODE level).

Items with the  icon are the only items for which you can set configuration properties (Default Properties and `<Application_Server_Name>`).

To set the configuration properties of an item, select the item and click the **Set Configuration Properties** tab in the right pane.

Setting a Property

To set a property in the configuration, follow these steps:

- 1 Select a property from the **Select a Property to Set** drop-down list.
- 2 Select **Set Property**. The property and an empty value field appear in the table.
- 3 Click the empty value field and enter a value.
- 4 Repeat steps 1 through 3 for each property to set.
- 5 Click **Save**.

► For the LOGIN and PASSWORD properties, when you select **Set Property**, a separate window opens. Enter the login and password values in this window.

For more information about individual properties, see [Configuration Properties](#) on page 89.

Modifying a Property

To modify a property (except LOGIN) in the configuration, follow these steps:

- 1 Select the property from the table.
- 2 Double-click the **Value** field.
- 3 Edit the value.
- 4 Repeat steps 1 through 3 for each property to modify.
- 5 Click **Save**.

To modify the LOGIN property in the configuration, follow these steps:

- 1 Select **LOGIN/PASSWORD** from the **Select a Property to add** pull-down menu.
- 2 Select **Set Property**.
The Set Access Info for Default Properties window opens.
- 3 Enter the new password and verify password.
- 4 Click **OK**.
- 5 Click **Save**.

Removing a Property

To remove a property from the configuration, follow these steps:

- 1 Select the property from the table.
- 2 Click **Remove Property**.
- 3 Repeat steps 1 and 2 for each property to remove.

- 4 Click **Save**.

View Current Configuration Tab

The options under this tab enable you to view all the JBoss AS SPI configuration properties set in the configuration on the HPOM management server or the JBoss AS SPI configuration properties for the selected application servers, groups, or nodes.

To view the configuration properties of an item, select the item and click the **View Current Configuration** tab in the right pane.

The following table describes the view when the specified item is selected.

Table 4 Description of View corresponding to each item

Item Name	Description of View
Application Servers	View all configuration properties set for all the listed application servers.
<Application_Server_Name>	View all configuration properties set for the application server (these properties can be modified by selecting the Set Configuration Properties tab).
Configurations	View all configuration properties saved in the configuration on the HPOM management server.
Default Properties	View all configuration properties that are set (these properties can be modified by selecting the Set Configuration Properties tab).
Defaults	View all configuration properties set at the global properties level.
Groups	View all configuration properties set for all the listed groups.
<Group_Name>	View all configuration properties set for the specific group.
Nodes	View all configuration properties set for the listed nodes.
<Node_Name>	View all configuration properties set for the specific node.

View Inherited Properties

A **View Inherited Properties** check box appears near the bottom of the window. By selecting this check box, the view of the configuration properties changes to show all inherited properties (those properties defined at a global properties level or GROUP level) that affect the selected item. Inherited properties are denoted by “<*>” appearing after the property.

By clearing this check box, the view shows only the configuration properties set at that level for the selected item.

You can modify the inherited properties at the level they are set. If “<*>” appears after the property, the property cannot be modified at that level. For example, if the property JAVA_HOME is set at the global properties level (under the Defaults folder), the property can only be modified in the Default Properties listed under the Defaults folder. Although JAVA_HOME appears (with “<*>” after it) in a <Group_Name>’s Default Properties view, JAVA_HOME cannot be modified at this level.

Properties set lower in the tree take precedence over those properties set higher in the tree. For example, if the property `JAVA_HOME` is set at the global properties level (under the Defaults folder) and the property `JAVA_HOME` is set at the GROUP level, the GROUP level property value takes precedence.

Configuration property precedence is as follows (listed from highest to lowest):

- 1 Server-specific
- 2 NODE level
- 3 GROUP level
- 4 Global properties level

Configuration Properties

Table 5 on the next page lists all properties by the JBoss AS SPI requirements, where:

Property	Name of the property.
Requirements	<p>Lists the property requirements for specific components where:</p> <ul style="list-style-type: none"> R - Required: the property must be set. C - Conditional: the property might need to be set if certain conditions are met. O - Optional: the property is not required for the component to work. blank - Not Applicable: the property does not affect this component.
JBoss AS SPI	Configuration requirements for the JBoss AS SPI to work.
Discovery Process	Requirements for the discovery process to work.
Auto-Discovered	The property is automatically set by the discovery process.
Level of Configuration	The level at which this property can be set within the configuration structure.
Default Properties	The global, group, or node level within the configuration structure.
Application Server	The server-specific level within the configuration structure.

For a description of the property, see [Property Definitions](#) on page 90.

Table 5 Properties Listed by the JBoss AS SPI Requirements

Property	Requirements		Auto-Discovered	Level of Configuration	
	JBoss AS SPI	Discovery Process		Default Properties	Application Server
JAVA_HOME	R	R		✓	✓
LOGIN	R	R		✓	✓
PASSWORD	R	R		✓	✓
JBOSS_HOME_LIST	R	R		✓	✓
ADDRESS	C	C			✓

Table 6 Property Definitions

Property	JBoss AS SPI Requirements	Description
ADDRESS	Conditional Required if the server is running on a virtual IP address or is on a remote node	The domain name or IP address where the server is listening. If not specified, the server is listening on the primary IP of the node on which the server is running. Example: SERVER1_ADDRESS = server.hp.com
JAVA_HOME	Required	The directory where the JDK/JRE is installed. The java engine is expected to be \$JAVA_HOME/bin/java. Example: JAVA_HOME = /opt/jboss/jdk130
JBOSS_HOME_LIST	Required	This is the directory where all the JBOSS_HOME locations are present separated by a semicolon (;).
LOGIN	Required Required if security is enabled on JBoss AS	A JBoss-defined user (not a system user) that is used to monitor a JBoss Application Server. Example: SERVER1_LOGIN = jbossadmin
PASSWORD	Required Required if security is enabled on JBoss AS	The password for the JBoss-defined user (USER or SERVER<n>_USER). Example: SERVER1_PASSWORD = jboss274admin

C Error Messages

The JBoss AS SPI error messages contains the following information:

- Error Message Number
- Description
- Severity
- Help Text (Probable Cause and Suggested Action)

Error messages can be viewed from the HPOM Message Browser. Double-click the error message to open the message. The Message Properties Window opens. Click the Message Text tab to view the error message.

WASSPI-1

Description	Unable to create the lock file <filename>. File already exists.
Severity	Critical
Help Text	<p>Probable Cause: Temporary lock files are used to avoid collisions when multiple JBoss AS SPI data collector processes attempt to access the same data file. This error occurs when the lock file cannot be created after several attempts because it already exists.</p> <p>Suggested Action: If a file by the same name already exists, it might not have been deleted by a previous run of the JBoss AS SPI data collector. You should delete this file manually.</p>

WASSPI-2

Description	Cannot access the SPI configuration.
Severity	Critical
Help Text	<p>Probable Cause: A JBoss AS SPI configuration file could not be located or accessed. Either the file does not exist or there was a problem reading the file.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Verify that the JBoss AS SPI has been configured correctly by running the SPI Admin → Verify tool. If the configuration is not correct, run the Discover or Configure tool to reinstall the files.2 Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem, for example, an I/O exception. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.

WASSPI-3

Description	Error parsing command line.
Severity	Critical
Help Text	<p>Probable Cause: The JBoss AS SPI data collector command line is incorrectly specified in a schedule policy.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the data collector command line syntax error. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Correct the policy that contains the incorrect command line and redeploy. Refer the <i>HP Operations Smart Plug-in for JBoss Application Server Configuration Guide</i> for more information on the JBoss AS SPI data collector command line.

WASSPI-4

Description	Error getting the metric definitions.
Severity	Critical
Help Text	<p>Probable Cause: The JBoss AS SPI data collector could not read the metric definitions XML document. This error can be caused by a missing configuration property, an I/O error, an XML parsing error, a missing file, or a corrupted serialized data file.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 If the UDM_DEFINITIONS_FILE property is missing from the JBoss AS SPI configuration, run the SPI Admin → Discover or Configure JBSSPI tool with the managed node selected.3 If the problem is with the metric definitions file (MetricDefinitions.xml) that is shipped with the JBoss AS SPI, run the SPI Admin → Discover or Configure JBSSPI tool with the managed node selected.4 If the problem is with a user-defined metric definitions file that is not shipped with the JBoss AS SPI, verify that this XML file adheres to the MetricDefinitions.dtd specification. Refer to the <i>HP Operations Smart Plug-in for JBoss Application Server Configuration Guide</i> for more information on writing user-defined metrics. Reinstall your user-defined metric definition file. Run the SPI Admin → Discover or Configure JBSSPI tool and verify that the UDM_DEFINITIONS_FILE property in the SPI configuration is specified correctly.5 If the underlying error is <code>ClassNotFoundException</code>, this is an internal error. Report this to HP Support.

WASSPI-5

Description	Error processing metric <i><metric_number></i> .
Severity	Major
Help Text	<p>Probable Cause: An error occurred while trying to collect data or perform calculations for the specified metric.</p> <p>Suggested Action: Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem. The error messages previous to this one may also provide more information about the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.</p>

WASSPI-6

Description	Required property <i><property_name></i> is missing from the JBoss AS SPI configuration.
Severity	Major
Help Text	<p>Probable Cause: The specified required property is missing from the JBoss AS SPI configuration file.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that the correct server information have been set for the JBoss servers on this managed node.2 Verify the property is specified correctly in the JBoss AS SPI configuration file (<code>/var/opt/OV/wasspi/jbs/conf/SiteConfig</code> on Unix platforms or <code>%OvAgentDir%\wasspi\jbs\conf\SiteConfig</code> on Windows platforms) on the managed node in question.

WASSPI-7

Description	Unable to contact server <server_name> at url=<URL>, port=<port>.
Severity	Critical
Help Text	<p>Probable Cause: The specified server is not running at the specified port.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that you have specified the correct server name and port information for the JBoss servers on this managed node.2 Verify that the properties, SERVERx_NAME and SERVERx_PORT, are specified correctly in the JBoss AS SPI configuration file /var/opt/OV/wasspi/jbs/conf/SiteConfig on Unix platforms or %OvAgentDir%\wasspi\jbs\conf\SiteConfig on Windows platforms) on the managed node in question.3 Verify that the JBoss Server is running on the managed node.

WASSPI-8

Description	Error saving graphing or reporting data to file <file_name>.
Severity	Critical
Help Text	<p>Probable Cause: The specified graphing or reporting data file could not be found or an I/O error occurred when trying to access the file.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Identify the steps to reproduce the problem.3 Run the SPI Admin → Start Tracing tool to turn on tracing. Try to reproduce the problem.4 Run the SPI Admin → Self-Healing Info tool. Contact HP support with the information gathered by this tool.

WASSPI-9

Description	Unable to retrieve property <i><property_name></i> .
Severity	Critical
Help Text	<p>Probable Cause: A required property is missing from one of the JBoss AS SPI configuration files.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the missing property. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that you have specified the correct information for the JBoss servers on the managed node in question.3 Verify that the missing property is now specified in the JBoss AS SPI configuration file (/var/opt/OV/wasspi/jbs/conf/SiteConfig on Unix platforms or %OvAgentDir%\wasspi\jbs\conf\SiteConfig on Windows platforms) on the managed node in question.

WASSPI-10

Description	Encountered problem accessing file <i><filename></i> .
Severity	Critical
Help Text	<p>Probable Cause: The specified file could not be found, created, or accessed. This file could be a temporary file.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the file in question and the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Verify that you have enough disk space to create temporary files.

WASSPI-11

Description	No servers have been specified in the JBoss AS SPI configuration file.
Severity	Critical
Help Text	<p>Probable Cause:</p> <p>The number of JBoss servers specified in the JBoss AS SPI configuration for the managed node in question is 0.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that you have specified the correct server name and port information for the JBoss servers on this managed node.2 Verify that the property, NUM_SERVERS, in the JBoss AS SPI configuration file (/var/opt/OV/wasspi/jbs/conf/SiteConfig on Unix platforms or %OvAgentDir%\wasspi\jbs\conf\SiteConfig on Windows platforms) is set to the number of JBoss servers on this managed node.

WASSPI-12

Description	Command <i><command></i> returned error exit code <i><exit code></i> .
Severity	Critical
Help Text	<p>Probable Cause:</p> <p>A command started by the JBoss AS SPI collector has returned an error (non-zero) exit code.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Identify the steps to reproduce the problem.2 Run the SPI Admin → Start Tracing tool to turn on tracing.3 Reproduce the problem.4 Run the SPI Admin → StopTracing tool to turn off tracing.5 Run the SPI Admin → Self-Healing Info tool. Contact HP support with the information gathered by this tool.

WASSPI-13

Description	Exception occurred while running an <code>opcmon</code> process.
Severity	Critical
Help Text	<p>Probable Cause:</p> <p>The JBoss AS SPI data collector attempted to run a process to execute an <code>opcmon</code> call. Either the process could not be created or was interrupted.</p> <p>Suggested Action:</p> <p>For UNIX systems, make sure the kernel configurable parameters <code>NPROC</code> and <code>MAXUPRC</code> are set high enough to allow process creation.</p>

WASSPI-14

Description	Unable to find file <code><file_name></code> .
Severity	Critical
Help Text	<p>Probable Cause:</p> <p>A file required by the JBoss AS SPI data collector could not be found.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the file in question and the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Run the SPI Admin → Discover or Configure JBSSPI tool with the managed node selected.

WASSPI-15

Description	Error parsing XML document <code><file_name></code> .
Severity	Critical
Help Text	<p>Probable Cause: An error occurred while parsing the specified XML document.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 If the XML document was provided by the user, correct the document. See the <i>HP Operations Manager Smart Plug-in for JBoss Application Server Configuration Guide</i> for more information about the correct format for a user-defined metric definition document.3 If the XML document is a document that is shipped with the JBoss AS SPI, run the SPI Admin → Discover or Configure JBSSPI tool to reinstall the JBoss AS SPI configuration files.

WASSPI-16

Description	A bad filter (<code><filter_value></code>) was specified for metric <code><metric_number></code> .
Severity	Major
Help Text	<p>Probable Cause: A metric filter is incorrectly specified in the metric definitions XML document.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 If the metric is specified in an XML document that was provided by the user, correct the document. See the <i>HP Operations Manager Smart Plug-in for JBoss Application Server Configuration Guide</i> for more information about the correct format for a user-defined metric definition document.2 If the metric is a pre-defined metric that is shipped with the JBoss AS SPI, run the SPI Admin → Discover or Configure JBSSPI tool to reinstall the JBoss AS SPI configuration files.

WASSPI-17

Description	Could not access MBean server on server '<server name>' at url=<url>, port=<port>.
Severity	Critical
Help Text	<p>Probable Cause:</p> <p>A problem occurred while the JBoss AS SPI data collector was requesting access to the JMX MBean server on the JBoss server. This could be caused by:</p> <ol style="list-style-type: none">1 The JNDI lookup to find the JMX MBean server in the application server failed.2 The LOGIN name specified in the JBoss AS SPI configuration does not have the correct permissions in the application server.3 The PASSWORD specified in the JBoss AS SPI configuration is incorrect. <p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that the LOGIN and PASSWORD properties are correct for the server in question.3 In the JBoss Administration Console, verify that the user is a valid JBoss user and has the correct permissions. To set the correct permissions, refer to the <i>HP Operations Smart Plug-in for JBoss Application Server Configuration Guide</i>.

WASSPI-18

Description	Error logging to datasource <datasource_class_name>. Logging process returned exit code <exit_code>.
Severity	Warning
Help Text	<p>Probable Cause:</p> <p>The ddflog process started by the JBoss AS SPI data collector returned a non-zero error code.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Identify the steps to reproduce the problem.2 Run the SPI Admin → Start Tracing tool to turn on tracing. Try to reproduce the problem.3 Run the SPI Admin → Self-Healing Info tool. Contact HP support with the information gathered by this tool.

WASSPI-19

Description	Encountered problem instantiating XSLT transformer with <i><file_name></i> .
Severity	Major
Help Text	Probable Cause: The XSL document that specifies the auto action report output contains errors. Suggested Action: Run the SPI Admin → Discover or Configure JBSSPI tool with the managed node selected.

WASSPI-20

Description	Encountered problem creating report for metric <i><metric_number></i> .
Severity	Major
Help Text	Probable Cause: An error occurred while producing a text report for the specified metric. Suggested Action: Run the SPI Admin → Discover or Configure JBSSPI tool with the managed node selected.

WASSPI-21

Description	Encountered problem instantiating factory implementation <i><class name></i> .
Severity	Critical
Help Text	Probable Cause: The java property specifying the class name is incorrect or the class does not implement the AppServerFactory interface. Suggested Action: Verify that the java property <code>appserver.implementation</code> is set to the fully qualified name of the class which implements the AppServerFactory interface. For example, if set on the java command-line: <code>-Dappserver.implementation=com.hp.openview.wasspi.WLSAppServerFactory</code>

WASSPI-23

Description	Error initializing collector analyzer for server <i><server_name></i> .
Severity	Critical
Help Text	<p>Probable Cause An exception was encountered while preparing to monitor server <i><server_name></i>.</p> <p>Suggested Action</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Identify the steps to reproduce the problem.3 Run the SPI Admin → Start Tracing tool to turn on tracing. Try to reproduce the problem.4 Run the SPI Admin → Self-Healing Info tool. Contact HP support with the information gathered by this tool.

WASSPI-24

Description	Error logging in to server <i><server_name></i> with login <i><login></i> .
Severity	Critical
Help Text	<p>Probable Cause: A security exception occurred while logging in to server <i><server_name></i>.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool on the managed node on which the error occurred and verify that you have specified the correct login and password properties.2 Verify that the login has appropriate permissions.

WASSPI-26

Description	The data logging process for server <i><server_name></i> timed-out.
Severity	Major
Help Text	<p>Probable Cause Depending on your configuration, either HP Performance Agent or CODA failed to exit before the time-out.</p> <p>Suggested Action</p> <ol style="list-style-type: none">1 Restart CODA using command opcagt -start.2 Restart HP Performance Agent using command mwa restart.

WASSPI-27

Description	RMI collector unable to process <i><command></i> .
Severity	Warning
Help Text	<p>Probable Cause An exception was encountered while performing an rmid related operation.</p> <p>Suggested Action</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Identify the steps to reproduce the problem.3 Run the SPI Admin → Start Tracing tool to turn on tracing. Try to reproduce the problem.4 Run the SPI Admin → Self-Healing Info tool. Contact HP support with the information gathered by this tool.

WASSPI-28

Description	RMID on port ' <i><port></i> ' has been ' <i><status></i> '.
Severity	Normal

WASSPI-29

Description	Collector server ' <i><server id></i> ' for Java Home ' <i><path></i> ' has been started.
Severity	Normal

WASSPI-30

Description	Failed to start <i><rmid_path></i> on port <i><port></i> .
Severity	Critical
Help Text	<p>Probable Cause: The specified path is already in use.</p> <p>Suggested Action: Run the SPI Admin → Discover or Configure JBSSPI tool. Set the RMID_PORT property to a port number which is not currently in use.</p>

WASSPI-31

Description	Lost connection to RMI collector while processing <i><command></i> .
Severity	Warning

WASSPI-32

Description	Unable to retrieve metadata for mbean <i><JMX-ObjectName></i> .
Severity	Warning

WASSPI-33

Description	No actions matched server <i><server name></i> , version <i><version></i> .
Severity	Warning
Help Text	<p>Probable Cause: JMXAction elements define FromVersion and ToVersion tags which do not match the server version.</p> <p>Suggested Action: If the action is valid on the server, adjust either the JMXAction definition's FromVersion/ToVersion elements or the server's VERSION property.</p>

WASSPI-34

Description	Metric <i><metric id></i> does not define any actions.
Severity	Warning
Help Text	<p>Probable Cause: The metric ID specified with the action <i>-m</i> option does not define a JMXActions element.</p> <p>Suggested Action: Correct the action <i>-m</i> option if an incorrect metric ID was specified. Otherwise, add a JMXActions definition to the metric definition.</p>

WASSPI-35

Description	Error executing action <i><action command-line></i> .
Severity	Major
Help Text	Probable Cause: An unexpected error occurred while executing the action. Suggested Action: View the managed node's errorlog to determine the root cause which is logged following the error message.

WASSPI-36

Description	MBean <i><JMX objectname></i> on server <i><server name></i> , does not expose operation <i><operation name></i> .
Severity	Warning
Help Text	Probable Cause: An action's JMXCalls element defines an operation not exposed by the specified MBean. Suggested Action: Correct the JMXCalls element or remove the operation from the element.

WASSPI-37

Description	MBean <i><JMX objectname></i> on server <i><server name></i> , does not expose attribute <i><attribute name></i> for write.
Severity	Warning
Help Text	Probable Cause: An action's JMXCalls element defines a write attribute exposed by the specified MBean as read-only. Suggested Action: If it is a custom MBean, update the MBean's management interface so the attribute is writable. Otherwise, remove the attribute definition from the JMXCalls element.

WASSPI-38

Description	MBean <i><JMX objectname></i> on server <i><server name></i> , does not expose attribute <i><attribute name></i> .
Severity	Warning
Help Text	Probable Cause: An action's JMXCalls element defines an attribute not exposed by the specified MBean ObjectName. Suggested Action: Correct the JMXCalls element or remove the attribute from the element.

WASSPI-39

Description	Error invoking operation <i><operation name></i> on MBean <i><JMX objectname></i> .
Severity	Major
Help Text	Probable Cause: An unexpected error occurred while invoking an operation on the specified MBean. The managed resource might have thrown an exception. Suggested Action: View the managed node's errorlog to determine the root cause which is logged following the error message.

WASSPI-40

Description	Error setting attribute <i><attribute name></i> on MBean <i><JMX objectname></i> .
Severity	Major
Help Text	Probable Cause: An unexpected error occurred while setting an attribute on the specified MBean. The managed resource might have thrown an exception. Suggested Action: View the managed node's errorlog to determine the root cause which is logged following the error message.

WASSPI-41

Description	Error getting attribute <i><attribute name></i> from MBean <i><JMX objectname></i> .
Severity	Major
Help Text	<p>Probable Cause: An unexpected error occurred while getting an attribute from the specified MBean. The managed resource might have thrown an exception.</p> <p>Suggested Action: View the managed node's errorlog to determine the root cause which is logged following the error message.</p>

WASSPI-42

Description	Error running command <i><command></i> .
Severity	Critical
Help Text	<p>Probable Cause A command started by the JBoss AS SPI collector reported an error.</p> <p>Suggested Action</p> <ol style="list-style-type: none">1 Identify the steps to reproduce the problem.2 Run the SPI Admin → Start Tracing tool to turn on tracing.3 Reproduce the problem.4 Run the SPI Admin → Stop Tracing tool to turn off tracing.5 Run the SPI Admin → Self-Healing Info tool. Contact HP support with the information gathered by this tool.

WASSPI-43

Description	Error publishing event <i><event-type></i> .
Severity	Major
Help Text	<p>Probable Cause An unexpected error occurred while a publisher was handling a metric or collect event.</p> <p>Suggested Action View the managed node's error log to determine the cause which is logged following the error message.</p>

WASSPI-201

Description	File <filename> not found.
Severity	Critical
Help Text	<p>Probable Cause: A configuration file could not be found.</p> <p>Suggested Action: Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that the correct information has been specified for the JBoss servers on the managed node on which the error occurred.</p>

WASSPI-202

Description	Cannot read file <filename>.
Severity	Critical
Help Text	<p>Probable Cause:</p> <ul style="list-style-type: none">• A file could not be opened or it could not be found.• Permissions might be incorrect or a directory might be corrupt. <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that the correct information has been specified for the JBoss servers on the managed node on which the error occurred.2 Verify that the permissions are correct for the HP Operations agent user to read this file.

WASSPI-203

Description	Cannot write file <filename>.
Severity	Critical
Help Text	<p>Probable Cause: Permissions might be incorrect, or a file or directory might be corrupt.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that the correct information has been specified for the JBoss servers on the managed node on which the error occurred.2 Verify that the permissions are correct for the HP Operations agent user to write this file.

WASSPI-204

Description	Error sending opcmmsg <message>.
Severity	Critical
Help Text	<p>Probable Cause: There was a problem running opcmmsg. opcmmsg may be missing or not have permissions to execute.</p> <p>Suggested Action: Confirm that the JBSSPI-Messages policy has been deployed.</p>

WASSPI-205

Description	Error sending opcmon <command>.
Severity	Critical
Help Text	<p>Probable Cause: There was a problem running opcmon. opcmon may be missing or not have permissions to execute (HPOM installation errors) or the system process table may be full.</p> <p>Suggested Action: Confirm that HPOM is properly installed and deployed to the managed node. Ensure that the process table is not full. If it is, consider having the system administrator increase it.</p>

WASSPI-206

Description	Cannot read directory <directory>.
Severity	Critical
Help Text	<p>Probable Cause: The permissions on the directory prevent the HP Operations agent user from reading it or the directory is corrupt.</p> <p>Suggested Action: Verify that the permissions are correct for the HP Operations agent user for this directory.</p>

WASSPI-207

Description	Cannot move <filename> to <filename>.
Severity	Critical
Help Text	<p>Probable Cause:</p> <ol style="list-style-type: none">1 Insufficient permissions.2 Insufficient disk space.3 File table problems. <p>Suggested Action:</p> <ol style="list-style-type: none">1 Verify that the permissions are correct for the HP Operations agent user.2 Verify that there is enough disk space to create files.3 Run the SPI Admin → Discover or Configure JBSSPI tool.

WASSPI-208

Description	The SPI must be Discover or Configured before it can be used.
Severity	Critical
Help Text	<p>Probable Cause:</p> <p>The SPI has not been configured on this node.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that the correct information has been specified for the JBoss servers on the managed node on which the error occurred.2 Run the SPI Admin → Verify tool on the managed node to confirm that the SPI has been successfully configured.

WASSPI-209

Description	Cannot contact JBoss Server.
Severity	Critical
Help Text	<p>Probable Cause:</p> <ul style="list-style-type: none">• The server could be down or not responding.• The SPI might be configured incorrectly. <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool.2 Run the SPI Admin → Verify tool on the managed node to confirm that the SPI has been successfully configured.

WASSPI-210

Description	Cannot configure the SPI.
Severity	Critical
Help Text	<p>Probable Cause: The SPI configuration process failed.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Run the SPI Admin → Discover or Configure JBSSPI tool on the managed node.

WASSPI-211

Description	Cannot create directory <directory>.
Severity	Critical
Help Text	<p>Probable Cause: There are insufficient permissions for the HP Operations agent user to create the directory or there is insufficient disk space.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Verify that the permissions are correct for the HP Operations agent user for this directory.2 Verify that there is enough disk space.

WASSPI-213

Description	Improper parameters to program <name>. Usage: <usage>.
Severity	Critical
Help Text	<p>Probable Cause: The parameters to the program are incorrect.</p> <p>Suggested Action: Correct the parameters.</p>

WASSPI-214

Description	Cannot run program <i><program name></i> .
Severity	Critical
Help Text	<p>Probable Cause: The program failed to run. It might be missing, permissions might be incorrect, the process table might be full.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Verify that the file exists. If it is a SPI program and the file is missing, run the SPI Admin → Discover or Configure JBSSPI tool again on the managed node.2 Verify that the permissions are correct for the HP Operations agent user.

WASSPI-215

Description	A JBoss server was not found in <i><directory></i> .
Severity	Critical
Help Text	<p>Probable Cause: The directory specified as HOME in the SPI configuration does not exist on the managed node.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Verify that JBoss is installed on the managed node.2 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that the correct information has been specified HOME on the managed node on which the error occurred.

WASSPI-216

Description	Configuration variable <i><name></i> missing for server <i><server_name></i> .
Severity	Critical
Help Text	<p>Probable Cause: A required SPI configuration variable was not found.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool.2 Verify that the correct information has been specified in the configuration for the managed node on which the error occurred.

WASSPI-218

Description	JBoss monitoring has been turned OFF for <i><server_name></i> .
Severity	Warning
Help Text	Probable Cause: Collection has been turned off for the specified server. Suggested Action: If desired, collection can be turned on by running the SPI Admin → Start Monitoring tool.

WASSPI-219

Description	JBoss monitoring has been turned ON for <i><server_name></i> .
Severity	Critical
Help Text	Probable Cause: Collection has been turned on for the specified server. Suggested Action: If desired, collection can be turned off by running the SPI Admin → Stop Monitoring tool.

WASSPI-221

Description	<i><file_name></i> does not exist.
Severity	Critical
Help Text	Probable Cause: The specified file does not exist. If it is a log file, no entries were ever logged to it. If it is a property file, it has not been configured. Suggested Action: Log files: If there have never been any entries written to the file, no action is necessary. Otherwise, run the SPI Admin → Discover or Configure JBSSPI tool. Property files: Run the SPI Admin → Discover or Configure JBSSPI tool.

WASSPI-222

Description	<file_name> is empty.
Severity	Critical
Help Text	<p>Probable Cause: The specified file is empty. If it is a log file, no entries were ever logged to it, or the entries were cleaned out. If it is a property file, it is not properly configured.</p> <p>Suggested Action: If the file is a configuration file, run the SPI Admin → Discover or Configure JBSSPI tool.</p>

WASSPI-223

Description	Cannot read <file_name>.
Severity	Critical
Help Text	<p>Probable Cause:</p> <ol style="list-style-type: none">1 A file could not be opened or it could not be found.2 Permissions might be incorrect or a directory might be corrupt. <p>Suggested Action:</p> <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool. Verify that you have specified the correct information for the JBoss servers on the managed node on which the error occurred.2 Verify that the permissions are correct for the HP Operations agent user to read this file.

WASSPI-224

Description	ddfcomp returned an error configuring <name>.
Severity	Critical
Help Text	<p>Probable Cause: ddfcomp returned an error. This could be because neither OVPA nor CODA is installed on the system or because of an error occurred while configuring the HP Performance Agent.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 If the performance agent is not installed, this error can be ignored.2 Otherwise, identify the steps to reproduce the problem.3 Run the SPI Admin → Start Tracing tool to turn on tracing. Try to reproduce the problem.4 Run the SPI Admin → Self-Healing Info tool. Contact HP support with the information gathered by this tool.

WASSPI-225

Description	No logfiles were found. Did you run Discover or Configure JBSSPI?
Severity	Critical
Help Text	Probable Cause: The logfile list is empty. Suggested Action: Run the SPI Admin → Discover or Configure JBSSPI tool with the managed node selected.

WASSPI-226

Description	Cannot read file <file_name>.
Severity	Critical
Help Text	Probable Cause: <ul style="list-style-type: none">• A file could not be opened or it could not be found.• Permissions might be incorrect or a directory might be corrupt. Suggested Action: <ol style="list-style-type: none">1 Run the SPI Admin → Discover or Configure JBSSPI tool.2 Verify that you have specified the correct information for the JBoss servers on the managed node on which the error occurred.3 Verify that the permissions are correct for the HP Operations agent user to read this file.

WASSPI-227

Description	No HP performance agent is installed. Data source will not be configured.
Severity	Warning
Help Text	Probable Cause: If a performance application is available, the SPI integrates with it. This warning indicates that none is available. Suggested Action: If you must have a performance agent installed, verify that it is installed correctly and is running; reinstall it if necessary. Otherwise, this message can be ignored.

WASSPI-228

Description	ddflog returned an error logging <logfile-name>: <system-error-msg>
Severity	Critical
Help Text	<p>Probable Cause: ddflog returned an error. This could be because the SPI was not properly configured to support logging performance data.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Redeploy SPI for JBoss Application Server and SPI Data Collector instrumentation on the node having the problem.2 Examine the system error message, if any, for clues to the problem.3 Run the SPI Admin → Start Tracing tool to turn on tracing. Try to reproduce the problem.4 Run the SPI Admin → Self-Healing Info tool. Contact HP support with the information gathered by this tool.

WASSPI-229

Description	Cannot connect to directory <directory-name>
Severity	Critical
Help Text	<p>Probable Cause: The directory does not exist, or the user the agent is running under does not have appropriate permissions to the directory.</p> <p>Suggested Action: Run the SPI Admin → Discover or Configure JBSSPI tool with the managed node selected.</p>

WASSPI-230

Description	Cannot get lock <file> after <time>
Severity	Critical
Help Text	<p>Probable Cause: The lock file <file> was not cleared in the <time> indicated. This could be due to a very slow running or hung SPI process. Possibly a SPI process that had a lock was killed before the lock it had open had been cleared.</p> <p>Suggested Action: Make sure no SPI processes are running. Manually remove the lock file.</p>

WASSPI-231

Description	Error starting JRE <JVM_file>: <message>
Severity	Critical
Help Text	<p>Probable Cause: Some error occurred starting Java. This could be that the specified JVM does not exist, has bad permissions, or that there are system resource limitations such as process table entries or memory, or that the JAVA_HOME variable in the SPI SiteConfig file is not set correctly.</p> <p>Suggested Action:</p> <p>Check for other errors generated at the same time, they might indicate the real cause. If the specified file does not exist, check the JAVA_HOME or HOME variables in the SPI configuration file by running the SPI Admin → Discover or Configure JBSSPI tool.</p>

WASSPI-232

Description	Server <name> specified on command line, but not in configuration
Severity	Critical
Help Text	<p>Probable Cause: There was a -i or -e specified on the collector command line which specified a server name that was not listed in the SPI configuration. The collector only knows about servers listed in the configuration.</p> <p>Suggested Action:</p> <ol style="list-style-type: none">1 Specify a correct server name on the command line.2 Run the SPI Admin → Discover or Configure JBSSPI tool.3 Verify the JBoss Server names are correctly listed and spelled in the SPI configuration file.

WASSPI-234

Description	Error running program <file>, return value: <n>
Severity	Critical
Help Text	<p>Probable Cause:</p> <p>The SPI attempted to run some application or auxiliary program and encountered an error doing so. The application or program is shown in the message as <file> and the return code from attempting to run it is shown as <n>.</p> <p>Suggested Action:</p> <p>If the tool is a SPI tool, make sure the SPI has been installed and configured correctly. If not, reinstall or reconfigure. If it is a system tool, make sure there are no system problems that prevent the tool from running.</p>

WASSPI-235

Description	Restart of OVPA agent failed
Severity	Warning
Help Text	<p>Probable Cause: The SPI attempted to automatically restart the OVPA agent and the automatic attempt failed.</p> <p>Suggested Action: Restart the OVPA agent manually using the <code>mwa restart server</code> command.</p>

WASSPI-236

Description	Failure when running XSLT on <code><xml></code> with stylesheet <code><xsl></code> : <code><message></code>
Severity	Critical
Help Text	<p>Probable Cause: As part of setting up graphing for user defined metrics, a translation of the UDM XML is done. This message indicated that the translation failed for some reason.</p> <p>Suggested Action: Review the message shown. It is most likely that there is an error in the XML.</p>

WASSPI-237

Description	Setting up Data Source <code><datasource></code>
Severity	Normal
Help Text	This is an informational message that a HP Performance Manager or OVPA was setup.

WASSPI-238

Description	No User Defined Metrics found
Severity	Warning
Help Text	<p>Probable Cause: The JMX Metric Builder → JBSSPI → UDM Graph Enable tool was run, but no UDM metrics had been defined.</p> <p>Suggested Action: Check that the UDM XML file has been named correctly.</p>

WASSPI-241

Description	Cannot delete file <file>
Severity	Critical
Help Text	<p>Probable Cause: The SPI attempted to delete a file, but was unable to do so. It might be that the protection of the file is set so that the HP Operations agent user cannot delete it, or that there is some system problem preventing the file from being deleted.</p> <p>Suggested Action: Make sure the protection of the file is correct.</p>

WASSPI-245

Description	Unrecognized variable <var> is configured for node <node>
Severity	Critical
Help Text	<p>Probable Cause: An unexpected variable was configured for the node</p> <p>Suggested Action: Launch the SPI Admin → Discover or Configure JBSSPI tool from the HP Operations console and select the node from the list. Look for the variable <var> included in the message and make sure that it is valid. Re-initiate the Discovery process by selecting OK on the Confirm Operation window.</p>

WASSPI-248

Description	Cannot deploy <policy> policy group to <node>
Severity	Warning
Help Text	Suggested Action: Refer the information on policy deployment in the HP Operations Manager for Windows online help. If the problem still persists, call HP Support.

WASSPI-249

Description	Cannot get the agent installation directory for <node>
Severity	Critical
Help Text	Suggested Action: Redeploy the JBSSPI discovery policy on the managed node. Make sure to uncheck the deploy policy only if version is newer check box if selected. If the problem still persists, call HP Support and provide the support representative with the following: <ul style="list-style-type: none">• The steps and other information on reproducing the problem• The trace files which are located in %OvInstallDir%\install\WASSPI\JBSSPI\English\Discovery\log directory

WASSPI-254

Description	Java exited with an error
Severity	Critical
Help Text	Probable Cause: While running the collector or other java application, either Java encountered an error of some kind, or the Java application exited with an error exit. Suggested Action: Check for other errors generated at the same time, they might indicate the real cause. Review the SPI's error log, it might give some other clues.

Others

Description	An unknown error appears in the JBoss AS SPI error log.
Severity	Warning
Help Text	<p>Suggested Action:</p> <ol style="list-style-type: none">1 Refer to the text following the error message in the JBoss AS SPI error log to help identify the underlying cause of the problem. You can view the SPI error log for a managed node by using the SPI Admin → View Error Files tool. The error message can be identified by the date/time stamp.2 Identify the steps to reproduce the problem.3 Run the SPI Admin → Start Tracing tool to turn on tracing. Try to reproduce the problem.4 Run the SPI Admin → Self-Healing Info tool. Contact HP support with the information gathered by this tool.

Index

A

- Add Application Server action, 85, 86
- Add Group action, 86
- Add Node action, 86
- Application Servers tree item, 84
- Application Servers view, 88

C

- Cancel button, 85
- command parameters
 - JBoss, 50
- Config JBSSPI tool
 - Add Application Server action, 85, 86
 - Add Group action, 86
 - Add Node action, 86
 - Application Servers tree item, 84
 - Application Servers view, 88
 - Cancel button, 85
 - Configurations view, 88
 - Configuration tree item, 84
 - Default Properties tree item, 84
 - Default Properties view, 88
 - Defaults tree item, 84
 - Defaults view, 88
 - Exit action, 85
 - Finish button, 85
 - Groups tree item, 84
 - Groups view, 88
 - modifying a property, 87
 - Nodes tree item, 84
 - Nodes view, 88
 - Remove ALL App Servers action, 85, 86
 - Remove Application Server action, 85, 86
 - removing a property, 87
 - Save action, 85
 - Save button, 85
 - Set Configuration Properties tab, 85, 87
 - setting a property, 87
 - View Configuration Settings tab, 85
 - View Current Configuration tab, 88
 - View Inherited Properties, 88

- configuration
 - completing, 36
 - properties, 89
- Configuration Editor, 83
 - Structure, 81
 - Global Properties, 81
 - GROUP Block, 81
 - NODE Block, 82
- Configurations view, 88
- Configuration tree item, 84
- configuring
 - remote systems, 55

D

- Default Properties tree item, 84
- Default Properties view, 88
- Defaults tree item, 84
- Defaults view, 88
- Discover or Configure JBSSPI tool
 - actions, 85
 - buttons, 84
- Discover or Configure tool
 - Discover or Configure JBSSPI - Tree, 83
- duration
 - customizing, 49

E

- error messages, 92 to 121
- Exit action, 85

F

- files, locations on management server/managed
 - nodes, 65, 66
- Finish button, 85

G

- graphs, 12
 - showing alarm conditions, 62
- Groups tree item, 84

Groups view, 88

I

Installing SPI

- Cluster Environment, 23
- Management Server, 20

Instruction Text, 13

instrumentation
deploying, 31

J

JAVA_HOME property, 90

JBOSS_HOME_LIST property, 90

JBoss AS SPI

- components, 11
- functions, 12

JBoss Server Admin tool group, 44

L

logfile monitoring
remote systems, 58

LOGIN property, 90

M

Message Browser, 13

message text
customizing, 49

metric attributes, 49

modifying
collection interval for all monitored metrics, 52
collection interval for selected metrics, 52
metrics policies, 48

modifying a property, 87

N

Nodes tree item, 84

Nodes view, 88

O

operator actions
graphs generated from, 62

P

PASSWORD property, 90

policies, 12

- customizing
 - duration, 49
 - message text, 49
 - severity, 49
 - thresholds, 49
- deploying, 35
- JBSSPI Discovery policy group, 47
- JBSSPI policy group, 47
 - JBSSPI-Logfiles, 47
 - JBSSPI-Metrics, 47
 - JBSSPI-Monitors, 47

properties, 89

- listed by JBoss AS SPI requirements, 90

Proxy node, 54

R

Remote Monitoring, 54, 55

Remote node, 54

remote systems
configuring, 55
logfile monitoring, 58

Remove ALL App Servers action, 85, 86

Remove Application Server action, 85, 86

removing a property, 87

S

Save action, 85

Save button, 85

Set Configuration Properties tab, 85, 87

Set Configuration Settings tab
modifying a property, 87
removing a property, 87
setting a property, 87

setting a property, 87

severity
customizing, 49

SPI Admin tool group, 41

T

thresholds
customizing, 49
exceeded
viewing graphs resulting from, 62

tools, 12

- JBoss Server Admin tool group, 12, 41

 - JBoss Server Status, 44

 - Start JBoss Server, 44

 - Stop JBoss Server, 44

 - View JBoss Logs, 44

- SPI Admin tool group, 12, 41

 - Discover or Configure JBSSPI, 41, 42

 - JBoss Server Status, 45

 - Self-Healing Info, 41, 43

 - Start JBoss Server, 45

 - Start Monitoring, 41, 43

 - Start Tracing, 42, 43

 - Stop JBoss Server, 45

 - Stop Monitoring, 41, 43

 - Stop Tracing, 42, 44

 - Verify, 42, 44

 - View Error File, 42

 - View Error Files, 44

 - View JBoss Logs, 45

V

- View Configuration Settings tab, 85

 - View Inherited Properties, 88

- View Current Configuration tab, 88

- View Inherited Properties, 88

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