



OMi Management Pack for JBoss Application Server

Software Version: 1.00

For the Operations Manager i for Linux and Windows® operating systems

Installation Guide

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Chapter 1: Introduction

The OMi Management Pack for JBoss Application Server (OMi MP for JBoss Application Server) works with Operations Manager i (OMi) and enables you to monitor the availability and performance of the JBoss Application Servers.

The OMi MP for JBoss Application Server includes the following components:

- JBoss Application Server Management Templates
- JBoss Application Server Aspects
- Parameters
- Configuration Item (CI) and Configuration Item Types (CITs)
- Run-time Service Model (RTSM) Views
- Policy Group Templates
- Event Type Indicators (ETIs)
- Health Indicators (HIs)
- Tools
- Graph Templates

For more information about the components, see the OMi MP for JBoss Application Server *Online Help* or *User Guide*.

Abbreviations Used in this Manual

Abbreviations	Expansion
OMi	Operations Manager i
RTSM	Run-time Service Model
OMi MP	OMi Management Pack
OMi MP for JBoss Application Server	OMi Management Pack for JBoss Application Server

Related Documentation

For more information about OMi MP for JBoss Application Server, see the following documents:

- OMi MP for JBoss Application Server - *Release Notes*
- OMi MP for JBoss Application Server - *User Guide*
- OMi MP for JBoss Application Server - *Reference Guide*

Licensing

The OMi MP licenses are available in a pack of 25 license units. Each license can be used per OS instance, irrespective of the application type. For example, the license pack can contain 5 licenses of OMi MP for Microsoft Skype for Business Server, 10 licenses of OMi MP for Oracle Database with any other combination of supported applications.

There are three types of licenses:

- Evaluation: A license with a fixed trial period of up to 60 days. This type of license is available only until a Time Based or Permanent license is purchased. Once purchased, the trial period immediately terminates.
- Term: A license that has a time-based expiration date.
- Perpetual: A license that does not expire.

To procure the license for the Entitlement Order Number (EON), go to <http://enterpriselicense.hpe.com> and log on using your HPE Passport credentials to redeem the license.

For information about applying the license, see "[Applying the License](#)".

Chapter 2: Installing OMi MP for JBoss Application Server

This section provides information about installing OMi MP for JBoss Application Server on BSM 9.2x or OMi 10.x (Linux or Windows) servers.

Installation Package

The following section provides information about the installation media for OMi MP for JBoss Application Server. The OMi MP for JBoss Application Server English locale is available through the electronic media (e-media) at [Unified Marketplace](#).

The e-media contains the software and the product documentation. In a distributed environment, it must be installed on all OMi 10.x - Data Processing Servers (DPS) and Gateway Servers (GWS).

The following table provides information about the documentation available in the following location:

<https://marketplace.saas.hpe.com/itom/content/omi-management-pack-jboss-application-server>

Document	Location	Purpose
Online Help	Available in the BSM 9.2x console Help menu. From the BSM console, click Help > BSM Help > Application Administration > Operations Management > OMi Management Pack for JBoss Application Server Available in the OMi 10.x console ? menu. From the OMi console, click ? General Help > Administration Guide > Management Packs > Management Pack Documentation > OMi Management Pack for JBoss Application Server	To provide information about the following: <ul style="list-style-type: none">• Using JBoss Management Templates, Aspects, and Policy Templates• Using Indicators - Health Indicators and Event Type Indicators.
Installation Guide	DOCUMENTATION\guides	
Interactive Installation Guide	DOCUMENTATION\guides	
User Guide	DOCUMENTATION\guides	

Document	Location	Purpose
Release Notes	DOCUMENTATION\releasenotes	To provide information about the following: <ul style="list-style-type: none"> • Salient Features • Installation Notes
Reference Guide	DOCUMENTATION\guides	To provide complete information about the metrics, policies and corresponding events and instructions.

Installation Prerequisites

The following section lists the hardware and software prerequisites for installing OMi MP for JBoss Application Server on BSM 9.2x or OMi 10.x (Linux and Windows) server.

Software Requirements

Before installing OMi MP for JBoss Application Server, the following components must be installed and configured on the BSM 9.2x or OMi 10.x Servers.

Management Server

Component	Version
BSM	9.23 or later*
Operations Manager i	9.23 or later*
Monitoring Automation	9.23 or later*
OMi MP for Infrastructure	1.10 or later*
<i>(Optional)</i> . OMi MP for Oracle Database	1.10 or later*

Note: For large scale environments, it is recommended to use BSM 9.24 or higher.

Managed Node

Component	Version
Operations Agent	11.12 or later* #
JRE	1.6 or later

On Windows operating system managed node, JBoss Discovery and collection fails.

- To resolve this problem on Operations Agent 11.1x, you must apply hotfixes **QCCR1A176251** and **QCCR1A165094**.
- To resolve this problem on Operations Agent 12.0, you must apply hotfix **QCCR1A184632**.

Set OPC_CONFIGFILE_TIMEOUT to three minutes by running the following command on the Windows managed node:

```
ovconfchg -ns eaagt -set OPC_CONFIGFILE_TIMEOUT 180
```

For more information, see the *OMi MP for JBoss Application Server Release Notes*.

Note: You must use 64 bit JRE with 64 bit Operations Agent and 32 bit JRE with 32 bit Operations Agent. You must use 32-bit JRE on Solaris nodes.

Note: On the Managed node, enable JMX for the JBoss Application Server which you want to monitor. JMX should be enabled for the servers in the `domain.xml` for JBoss EAP 6.x and JBoss AS 7 or higher.

For example, below is the snippet of `domain.xml`:

```
<subsystem xmlns="urn:jboss:domain:jmx:1.3">
  <expose-resolved-model proper-property-format="false"/>
  <remoting-connector use-management-endpoint="false"/>
</subsystem>
```

Note: The `jmx-remoting.sar` file has to be deployed for monitoring JBoss EAP 5.x. For example, following is the path where the `sar` file is deployed:

```
$JBOSS_HOME\server\<ServerName>\deploy\jmx-remoting.sar
```

Note: *For more information about compatible software applications, see [Support Matrices for Operations Center products](#) (HPE Passport sign in required).

Installation Checklist

Ensure that the installation tasks described in the following table are completed in the specified order:

If you have already installed OMi 10.x, skip to [Task 6](#).

Management Server

Serial	Task	Reference
1	Check the Installation Prerequisites for BSM	See the chapter <i>General Prerequisites</i> in the <i>BSM Installation Guide</i> .
2	Install BSM version 9.23 or higher	See the <i>Install BSM 9.20</i> and <i>Install the Latest BSM 9.2x Minor Minor Release and Patch</i> chapters in the <i>BSM Installation Guide</i> .
3	Install Monitoring Automation version 9.23 or higher	See the <i>Installing Monitoring Automation</i> section in the <i>Operations Manager i Monitoring Automation Installation Guide</i> .
4	Verify the Monitoring Automation installation	See the <i>Using Monitoring Automation</i> chapter in the <i>Monitoring Automation for HPE Operations Manager i Installation Guide</i> .
5	Install Additional Software Update for Monitoring Automation 9.23 Note: If you are installing OMi MP for JBoss Application Server on BSM 9.23, you must install additional software update for Monitoring Automation 9.23.	See the "Installing Additional Software Update for Monitoring Automation 9.23" section.
6	Clean up OMi MP for Infrastructure version 1.00	If OMi MP for Infrastructure version 1.00 is already installed, see section <i>Removing OMi MP for Infrastructure</i> version 1.00 in the <i>OMi Management Pack for Infrastructure 1.10 Installation Guide</i> .
7	Install OMi MP for Infrastructure 1.10 or higher	See the chapter <i>Installing OMi MP for Infrastructure 1.10</i> in the <i>OMi Management Pack for Infrastructure 1.10 Installation Guide</i> .
8	(Optional). Install OMi MP for Oracle Database 1.10 or higher	See the chapter <i>Installing OMi MP for Oracle Database version 1.10 on BSM</i> in the <i>OMi Management Pack for Oracle Database Installation Guide</i> .

Serial	Task	Reference
10	Install OMi MP for JBoss Application Server 1.00	See the section Installing OMi MP for JBoss Application Server .
11	Apply the License	See the section Applying the License .

Managed Node

Task	Reference
Install Operations Agent 11.12 or higher	See the chapter <i>Installing the Operations Agent 11.12</i> in the <i>Operations Agent and Operations Smart Plug-ins for Infrastructure Installation Guide</i> .
Enable JMX for the JBoss Application Server instance which you want to monitor.	For more information about enabling JMX, see https://access.redhat.com/solutions/443033 and https://developer.jboss.org/wiki/UsingJconsoleToConnectToJMXOnAS7

Configuring Library Path on a Solaris Managed Node

This section provides information about configuring the library path on a Solaris managed node.

Note: The following configuration is a prerequisite only when the OMi MP for JBoss Application Server is used for monitoring Solaris managed nodes.

For OMi MP for JBoss Application Server to monitor managed nodes on Solaris platform, ensure the `Expat.so` library used for XML parser perl module is able to resolve dynamic dependency for all the required libraries using following steps as agent user:

1. To find `Expat.so` library, run the following commands:

```
cd /opt/0V/non0V/perl/a/lib
find . -name Expat.so
```

2. To find the list of dynamic dependencies, run the following commands:

```
Go to <Expat.so> path
ldd Expat.so
```

If you see the error message “file not found” for `libgcc_s.so`, configure the `libgcc_s.so` library path at `MPLD_LIBRARY_PATH` environment variable on a Solaris managed node by following step 3.

3. Set `libgcc_s.so` library path in `MPLD_LIBRARY_PATH` environment variable as root user by following these steps:

- a. Find the `libgcc_s.so` on a Solaris managed node using the following command:

```
find / -name libgcc_s.so
```

- b. Search `libgcc_s.so` using the following command:

```
file <libgcc_s.so along with path>
```

- c. If `libgcc_s.so` is not installed on the node, install the GCC Runtime libraries package.

4. Open `/etc/profile` in vi editor using the following command:

```
vi /etc/profile
```

5. Add the following lines to the `/etc/profile` file:

```
MPLD_LIBRARY_PATH=<libgcc_s.so path>
```

```
export MPLD_LIBRARY_PATH
```

Note: `libgcc_s.so path` is the directory where it is present.

6. Set the `libgcc_s.so` library path in Agent configuration.

```
/opt/OV/bin/ovconfchg -ns ctrl.env -set MPLD_LIBRARY_PATH <libgcc_s.so path>
```

Note: `libgcc_s.so path` is the directory where it is present.

7. Save the file.
8. Restart the HPE Operations Agent running the following command:

```
/opt/OV/bin/ovc -kill
```

```
/opt/OV/bin/opcagt -cleanstart
```

Installing Additional Software Update for Monitoring Automation 9.23

Note: You must install additional software update for Monitoring Automation 9.23 only for BSM 9.23.

Before installing OMi MP for JBoss Application Server, you must install an additional software update for Monitoring Automation 9.23. If you are using Monitoring Automation 9.24 or a later version, you do not need to install this additional software update. The additional software update for Monitoring Automation 9.23 (HPOprMA_update.zip) is available in the e-media or MPDVD, under the folder HPOprMA_update.

For more information about installing the update software, see ["Installing Monitoring Automation 9.23 Software Update"](#).

Installing OMi MP for JBoss Application Server BSM 9.2x or on OMi 10.x Server

You can use the e-media to install the OMi MP for JBoss Application Server on the BSM 9.2x or OMi 10.x (Linux or Windows) server. The following section provides the installation instructions:

On Linux

Note: In a BSM 9.2x or OMi 10.x distributed environment, JBoss Application Server must be installed on all BSM 9.2x or OMi 10.x servers, including DPS and GWS.

Follow these steps:

1. Log on as root user.

Note: If OMi is configured as a non-root user, then log on as an OMi non-root.

2. Set the umask by typing the command `umask 022`.
3. Copy and extract the `OMi_MP_for_JBoss_Application_Server_<version>.zip` file to a *<Temp folder>* on BSM 9.2x or OMi 10.x servers.
4. Run the following command:


```
<TEMP Folder>/mpinstall.sh -i
```
5. To accept the End User License Agreement (EULA), type **Yes** or **Y** and to decline the license agreement, type **No** or **N**.

After the installation is complete, a message appears stating: OMi Management Pack Installation Finished.

On Windows

Note: In a BSM 9.2x or OMi 10.x distributed environment, OMi MP for JBoss Application Server must be installed on all BSM 9.2x or OMi 10.x servers, including DPS and GWS.

Follow these steps:

1. Copy and extract the `OMi_MP_for_JBoss_Application_Server_<version>.zip` file to a *<Temp folder>* on the BSM 9.2x or OMi 10.x servers.
2. Open the command prompt, change the directory to the *<Temp folder>*, and run the following command:


```
cscript /nologo mpinstall.vbs -i
```
3. To accept the End User License Agreement (EULA), type **Yes** or **Y** and to decline the license agreement, type **No** or **N**.

After the installation is completed, a message appears stating: *OMi Management Pack Installation Finished*.

Verifying the OMi MP for JBoss Application Server Installation

This section provides information about verifying the installation of OMi MP for JBoss Application Server on BSM 9.2x or OMi 10.x (Linux and Windows) servers.

You can perform any one of the following checks to verify the OMi MP for JBoss Application Server installation:

- Check the log files for any errors on GWS (BSM 9.2x or OMi 10.x), DPS (BSM 9.2x or OMi 10.x), and typical servers (BSM 9.2x or OMi 10.x) at the following locations:

For Linux:

`/opt/HP/BSM/log/mpinstall.log`

For Windows:

`%TOPAZ_HOME%\log\mpinstall.log`

Note: The OMi logs are available on both (BSM 9.2x or OMi 10.x) GWS and (BSM 9.2x or OMi 10.x) DPS at the following location:

On BSM < or = 9.25

Linux: /opt/HP/BSM/log/EJBContainer/opr-configserver.log

Windows: %TOPAZ_HOME%\log\EJBContainer\opr-configserver.log

On BSM > or = 9.26 and OMi 10.x

Linux: /opt/HP/BSM/log/jboss/opr-webapp.log

Windows: %TOPAZ_HOME%\log\jboss\opr-webapp.log

- Check the following location BSM 9.2x or on the OMi 10.x console:
 - On BSM 9.2x, click **Admin > Operations Management > Setup > Content Packs**.
The **OMi Management Pack for JBoss Application Server** must appear in the Content Pack Definitions pane.
 - On OMi 10.x, click **Administration > Setup and Maintenance > Content Packs**.
The **OMi Management Pack for JBoss Application Server** must appear in the Content Pack Definitions pane.
- To list the OMi MPs installed on the BSM 9.2x or OMi 10.x server, run the following command on BSM 9.2x or OMi 10.x GWS:

For Linux:

```
/opt/HP/BSM/bin/ContentManager.sh -l -username <username> -password <pwd>
```

For Windows:

```
%TOPAZ_HOME%\bin\ContentManager.bat -l -username <username> -password <pwd>
```

Note: The ContentManager.bat or ContentManager.sh command lists the Content Pack name and version.

Applying the License

This section provides information about updating and activating the license.

Note: For more information about procuring the license, see the ["Licensing"](#) section.


To update your deployment with a new license and to activate the license, follow these steps:

1. Navigate to the License Management pane:

On BSM 9.2x, click **Admin > Platform > Setup and Maintenance > License Management**.

On OMi 10.x, click **Administration > Setup and Maintenance > License Management**.

The License Management provides details about the name, license type, days left to expiry of license, expiration date, capacity, and capacity details.

2. Click  to open the Add License dialog box where you can search for the relevant .dat file.

Note: You can download .dat file from <http://enterpriselicense.hpe.com>.

Chapter 3: Getting Started


This section provides the step-by-step tasks involved in monitoring the JBoss Application Servers using OMi MP for JBoss Application Server:

Task 1: Adding Nodes to the BSM 9.2x or OMi 10.x Console

Note: If the JBoss Application Servers (JBoss EAP version 5, 5.1, and 6.1) that you want to monitor are already being monitored by Smart Plug-in for JBoss Application Server (JBoss AS SPI) then remove the SPI artifacts and datasources from the node hosting the JBoss Application Servers before proceeding further. For more information, see the *HP Operations Smart Plug-in for JBoss Application Server Installation and Configuration Guide*.

Note: If the node already exists in Run-time Service Model (RTSM), you can skip this step and proceed to [Task 4](#).

Before you begin monitoring, you need to add the nodes:

1. Open the Monitored Nodes pane:
On BSM 9.2x, click **Admin > Operations Management > Setup > Monitored Nodes**.
On OMi 10.x, click **Administration > Setup and Maintenance > Monitored Nodes**.
2. In the Node Views pane, click **Predefined Node Filters > Monitored Nodes** and click  and then click **Computer > <select the OS Type>**. The Create New Monitored Nodes dialog box appears.
3. Specify the Primary DNS Name, IP Address, Operating System, and Processor Architecture of the node and click **OK**.

The newly created node is saved as a CI instance in the RTSM.

Note: The Node with Operations Agent needs to be connected to OMi server and certificate needs to be granted.

Task 2: Enabling Enrichment Rules

The Enrichment Rules must be enabled to reconcile more than one J2EE Domain CIs with the same name as a single CI entity.

To enable the enrichment rule, perform the following steps :


1. Open the Infrastructure Settings pane:

On BSM 9.2x, click **Admin > RTSM Administration > Modeling > Enrichment Manager**.

On OMi 10.x, click **Administration > RTSM Administration > Enrichment manager**.

2. Under **Root**, click **Operations Management > J2EE Application Servers**.
3. Select **JBossJ2EEDomainReconciliation**.
4. Right-click and select **Properties**.

The Enrichment Rule Properties window appears.

5. Click **Next**.
6. Select **Rule is Active**.
7. Click **Finish**.
8. In the Enrichment Rules pane, click  to save the changes.

Task 3: User Privileges for Non-Root User

1. You must provide read, write, and execute permissions to non-root user for `/var/opt/OV` directory.
2. You must provide read permissions to all the files and sub directories of the JBoss Application Server Installed directory to the non-root user.

Task 4: Deploying the JBoss Discovery Aspect

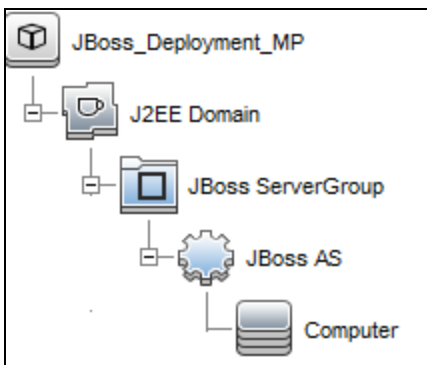
The JBoss Discovery Aspect enables you to discover JBoss Application Server instances in the environment. To discover the JBoss Application Server CIs on the added managed nodes, you must

deploy the JBoss Discovery Aspect to a Computer CI.

Note: The *JMX User Name* should have the administrative privileges to collect the management data from the JBoss Application Server.

The JBoss Discovery Aspect deployment discovers the Configuration Item (CIs) of the following CI types (CITs):

- JBoss AS
- CICollection (JBoss Server Group)
- J2EE Domain



Note: The default domain name for J2EE Domain for EAP 5.x is `jboss_hostname`.

To deploy the JBoss Discovery Aspect, follow these steps:

1. Open the Management Templates & Aspects pane:

On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.


2. In the Configuration Folders pane:

Configuration Folders > Application Server Management > JBoss Management > Aspects

3. In the Aspects folder, click **JBoss Discovery** Aspect, and then click  **Assign and Deploy** to open the Assign and Deploy Wizard.

4. In the **Configuration Item** tab, select the configuration item to which you want to deploy the **JBoss Discovery** Aspect and then click **Next**.

The **Required Parameters** tab opens and a message appears stating that there are no parameters that require editing for this Assignment.

5. In the **Required Parameters** tab, click **Next** to go to the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x.
6. *(Optional)*. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, you can override the default values of any parameter. You can specify a value for each parameter at the Management Template level. By default, parameters defined as expert parameters are not displayed. To display expert parameters, click  **Show Expert Parameters**. The Frequency of JBoss MP Log (Common Setting) parameter is displayed.

You can select the Frequency of JBoss MP Log (Common Setting) parameter and then click **Edit**. The Edit Parameter dialog box opens. Click **Value**, specify the value, and then click **OK**.
7. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, click **Next** to go to the **Configure Options** tab.
8. *(Optional)*. In the **Configure Options** tab, if you do not want to enable the assignment immediately, clear the **Enable Assigned Objects** check box on BSM 9.2x or **Enable Assignment(s)** check box on OMi 10.x. You can then enable the assignment later using the Assignments & Tuning pane.
9. Click **Finish**.

Note: After the JBoss Discovery Aspect is deployed, the following message appears:
Assignment and deployment jobs created. To check the status of the deployment job, go to the following location:

On BSM 9.2x, click **Admin > Operations Management > Monitoring > Deployment Jobs**.

On OMi 10.x, click **Administration > Monitoring > Deployment Jobs**.

Task 5: Verifying Discovery

After you deploy the JBoss Discovery Aspect, you must verify if the CIs are populated in the View Explorer.

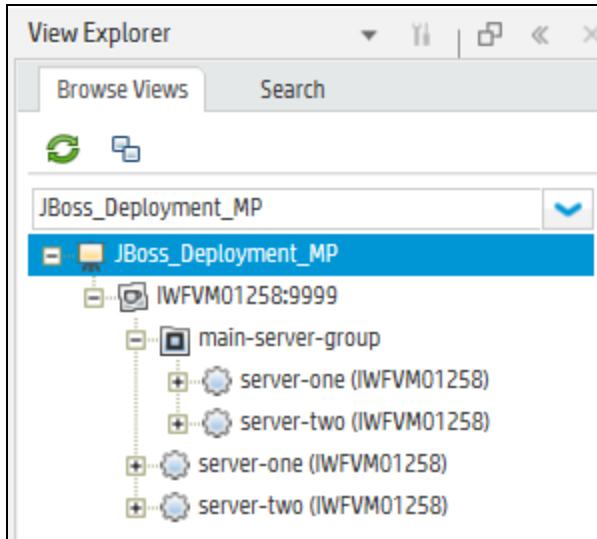
To view the CIs discovered, follow these steps:

1. Open the Event Perspective pane:

On BSM 9.2x, click **Applications > Operations Management > Event Perspective**.

On OMi 10.x, click **Workspaces > Operations Console > Event Perspective**.

2. In the **Browse Views** tab, select the **JBoss_Deployment_MP**.



Task 6: Deploying the JBoss Management Templates or Aspects

This section is further divided into [Task 6a: Identifying and Deploying JBoss Management Templates](#) and [Task 6b: Identifying and Deploying JBoss Aspects](#) provides information on identifying and deploying the JBoss Management Templates or Aspects based on your specific requirements.

Data Collection

Frequency (polling interval) at which each Aspect must be monitored is predefined with a default value in a specific frequency parameter. Frequency parameter is an expert parameter that is defined for each of the metrics regardless of whether they are for generating events or not.

Following are the four predefined frequency parameters:

Parameter	Frequency
Very High	5 mins
High	15 mins
Medium	1 hour
Low	24 hours

After Management Templates and Aspects are deployed, the collector is triggered based on the predefined frequency parameter in a specific Aspect. You can modify the default value of the parameter at the following levels:

- During deployment of the Management Template or Aspects using the Management Templates & Aspects pane.
- After deployment using the Assignments & Tuning pane.

For more information about how to modify the parameter values, see section *Tuning Parameters in the OMi MP for JBoss Application Server User Guide*.

Task 6a: Identifying and Deploying JBoss Management Templates

Before deploying the JBoss Management Templates, you must deploy the JBoss Discovery Aspect. For more information, see [Task 4: Deploying the JBoss Discovery Aspect](#).

Note: The Aspects such as JBoss JCA Statistics, JBoss JMS Performance, JBoss Classloading Statistics, and JBoss Application Status are not part of any of the Management Templates. These Aspects are used to monitor specific areas such as application status, JCA status, JMS utilization and performance, and so on. You can add one or more of these Aspects to Management Templates based on your monitoring requirements.

You can identify the JBoss Management Template suitable for your environment.

- If you want to monitor the areas of the JBoss Application Server such as the server status, JVM, JDBC, Servlets, and server logs, you can deploy the **Essential JBoss Management Template**.
- If you want to monitor JBoss Application Server environment key areas of JBoss Application Server such as Availability, JVM, JDBC, EJB, Servlets, Transactions, Server logs along with

infrastructure areas of CPU, Memory and Disk, and Oracle database areas such as Availability, Locks, and Memory, you can use the **Essential JBoss and Oracle Database Management Template**. Deploy any aspect other than base aspect to discover Oracle CIs which are in relationship with JBoss JDBC datasource CIs.

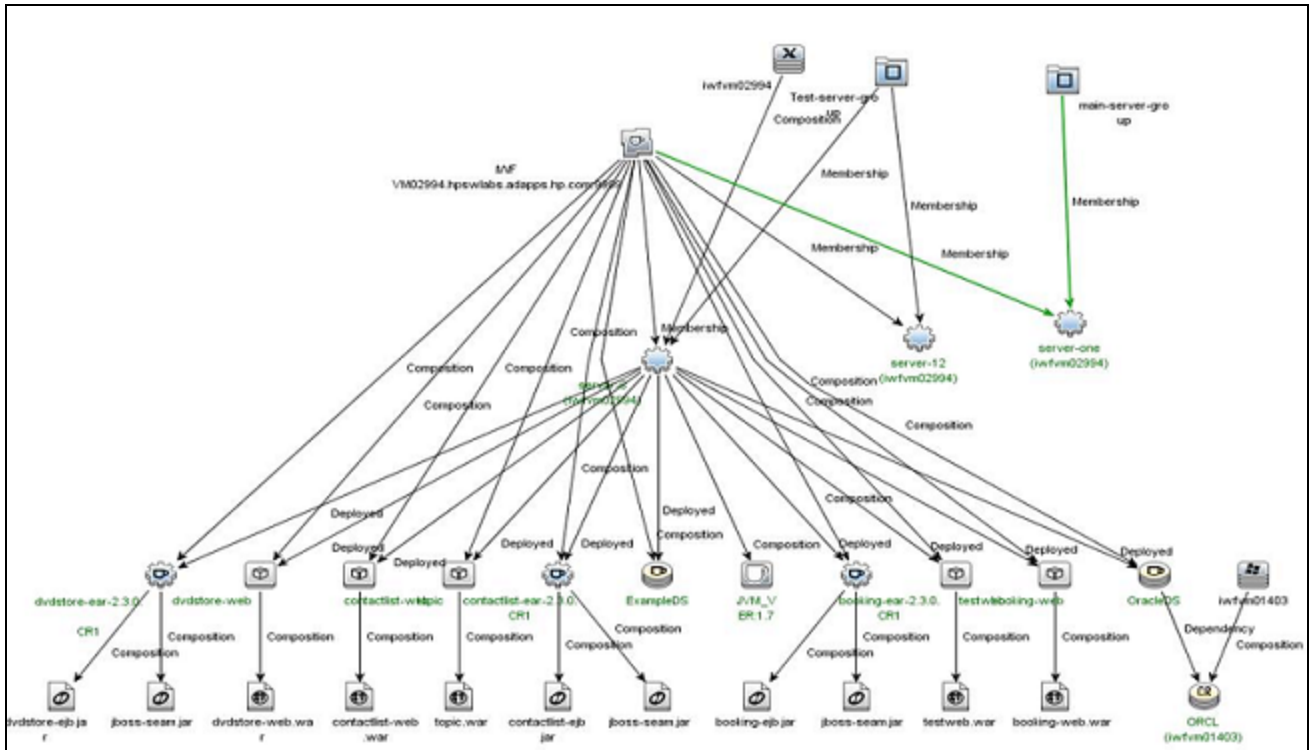
For more information on deploying the Essential JBoss and Oracle Database Management Template, see the *Monitoring Composite Applications* section in the *OMi MP for JBoss Application Server User Guide or Online Help*.

The JBoss Essential Management Template discovers the JBoss Domain CI, JBoss Server, and other related CIs and completes the topology,

The following CIs are discovered:

- JVM
- Web Application
- Oracle
- J2EE Application
- JDBC Data Source
- CICollection (JBoss Server Group)
- EJB Module
- Entity Bean
- Message Driven Bean
- Stateless Session Bean
- Stateful Session Bean
- Web Module
- Servlet

An example of this is shown in the following figure:



To deploy the Essential JBoss Management Template to the JBoss Domain CI, follow these steps:


1. Open the Management Templates & Aspects pane:

On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

Click **Configuration Folders > Application Server Management > JBoss Management > Management Templates**.

3. In the Management Templates folder, click the Management Template that you want to deploy, and then click  **Assign and Deploy**. The Assign and Deploy wizard opens.


4. In the **Configuration Item** tab, click the **JBoss Domain** CI to which you want to assign the Management Template, and then click **Next**. You can select multiple items by holding down the **CTRL** or **SHIFT** key while selecting them. Click **Next** to accept the CIs and go to **Required Parameters**.

5. In the **Required Parameters** tab, all the mandatory parameters that do not yet have a value are

listed. Since the parameters are mandatory, you must assign a value before you deploy the Management Template. Do the following steps to assign values:

- a. Select the **JBoss JMX User Name** parameter in the list and click  **Edit**.


The Edit Parameter: JBoss JMX Username dialog box opens.

- b. Click **Value**, specify the user name, and then click **OK**.
- c. Select the **JBoss JMX Password** parameter in the list and click  **Edit**.

The Edit Parameter: JBoss JMX Password dialog box opens.


- d. Enter the password for the user name and then click **OK**.

(Optional). For JBoss Application Servers using the SSL authentication:

- a. Select the **JBoss Application Server SSL Keystore File Path** parameter in the list, and then click  **Edit**.


You can also double-click on a parameter to edit it.

The Edit Parameter: JBoss Application Server SSL Keystore File Path dialog box opens.

- b. Click **Value**, specify the path to JBoss Application Server SSL Keystore, and then click **OK**.
- c. Select the **JBoss Application SSL Keystore File Password** parameter in the list, and then click  **Edit**.

You can also double-click on a parameter to edit it.


The Edit Parameter: JBoss Application SSL Keystore File Password dialog box opens.

- d. Click **Value**, specify the **JBoss Application SSL Keystore File Password**, and then click **OK**.
 - e. Click **OK**.
6. Click **Next** to go to the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x.
 7. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, to change the default values of the parameters, you can select the parameter and then click  **Edit**.

The Edit Parameter dialog box opens.

Click **Value**, specify the value, and then click **OK**.

Note: In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, you can override the default values of any parameter. You can specify a value for each parameter

at the Management Template level. By default, parameters defined as expert parameters are not displayed. To display expert parameters, click  **Show Expert Parameters**.

8. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, click **Next**.
9. (Optional). In the **Configure Options** tab, if you do not want to enable the assignment immediately, clear the **Enable Assigned Objects** check box on BSM 9.2x or **Enable Assignment(s)** check box on OMi 10.x. You can then enable the assignments later using the **Assignments & Tuning** pane.
10. Click **Finish**.

For more information about troubleshooting extended discovery, see the section *Troubleshooting Scenarios* in the *OMi MP for JBoss Application Server User Guide or Online Help*.



Task 6b: Identifying and Deploying JBoss Aspects

To deploy the JBoss Application Server Aspects, follow these steps:

1. Open the Management Templates & Aspects pane:

On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.
2. In the Configuration Folders pane:

Click **Configuration Folders > Application Server Management > JBoss Management > Management Templates & Aspects**.
3. In the Management Templates & Aspects pane, click the **Aspects** folder, and select an Aspect and then click  **Assign and Deploy** to open the Assign and Deploy wizard.
4. In the **Configuration Item** tab, select the Configuration Item to which you want to deploy the Aspect.
5. Click **Next** to go to **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x. To change the default values of the parameters, you can select the parameter and then click  **Edit**.

The Edit Parameter dialog box opens.

Click **Value**, specify the value, and then click **OK**.
6. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, click **Next**.

7. *(Optional)*. In the **Configure Options** tab, if you do not want to enable the assignment immediately, clear the **Enable Assigned Objects** check box on BSM 9.2x or **Enable Assignment(s)** check box on OMi 10.x. You can then enable the assignment later using the Assignments & Tuning pane.
8. Click **Finish**.

The following Aspects are not part of any of the JBoss Management Templates

Verifying Discovery for Extended Topology

After you deploy the JBoss Application Server Management Templates or JBoss Application Server Aspects, you can verify if the CIs are populated in the View Explorer. The following CIs are discovered:

- JVM
- Web Application
- Oracle
- J2EE Application
- JDBC Data Source
- CICollection (JBoss Server Group)
- EJB Module
- Entity Bean
- Message Driven Bean
- Stateless Session Bean
- Stateful Session Bean
- Web Module
- Servlet

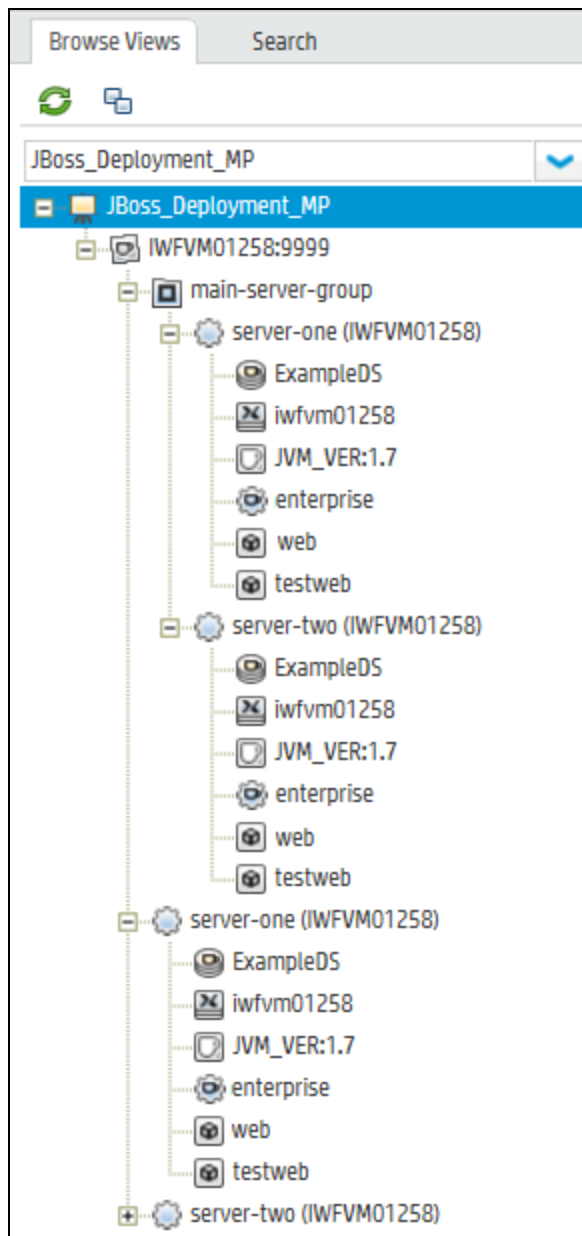
To view the CIs in the View Explorer, follow these steps:

1. Open the Event Perspective pane:

On BSM 9.2x, click **Applications > Operations Management > Event Perspective**.

On OMi 10.x, click **Workspaces > Operations Console > Event Perspective**.

2. In the View Explorer, select **JBoss_Deployment_MP** from the drop-down list. You can see the extended topology comprising CIs associated with the **JBoss_Deployment_MP** as shown in the following figure:



Appendix A: Installing Monitoring Automation

9.23 Software Update

This section provides detailed information about installing the software update in a distributed BSM environment.

If you do not have a distributed BSM environment, you can skip to the section "[Installing Additional Software Update in a Typical BSM Environment](#)".

Installing Additional Software Update in a Distributed BSM Environment

In a distributed BSM environment, the BSM DPS and BSM GWS are available on different systems. The additional software update needs to be installed on both the BSM DPS and BSM GWS.

Installing Additional Software Update on BSM DPS

To install the additional software update on BSM DPS running in a distributed BSM environment, follow these steps:

1. Run the following commands to check the version of the current `opr-config-content-server.war` file:

On Linux:

```
cd /opt/HP/BSM/opr/webapps  
  
/opt/HP/BSM/opr/support/what.sh ./opr-config-content-server.war
```

On Windows:

Go to the drive where BSM is installed:

```
cd /d %TOPAZ_HOME%\opr\webapps  
  
cscript %TOPAZ_HOME%\opr\support\what.vbs opr-config-content-server.war
```


Note: If the version number is lower than 09.23.174, then proceed to the next step. If the version number is 09.23.174 or higher, then the current BSM installation already contains the required software update and you do not need to perform the remaining steps in this section.

- Run the following command to stop the BSM services running on BSM DPS:

On Linux:

```
/opt/HP/BSM/scripts/run_hpbsm stop
```

On Windows:

```
%TOPAZ_HOME%\bin\SupervisorStop.bat
```

- Take a backup of the existing `opr-config-content-server.war` file, which exists in the following folder:

On Linux:

```
/opt/HPBSM/opr/webapps
```

On Windows:

```
%TOPAZ_HOME%\opr\webapps
```

The `opr-config-content-server.war` file must be backed up to a different folder.

- Extract the `HP0prMA_update.zip` to a temporary folder and copy `opr-config-content-server.war` to the following folder:

On Linux:

```
/opt/HPBSM/opr/webapps
```

On Windows:

```
%TOPAZ_HOME%\opr\webapps
```

- Run the following command to deploy the new WAR file from the extracted ZIP file:

On Linux:

```
/opt/HP/BSM/opr/bin/oprcfg-configuration.sh -setup omi -noGW
```

On Windows:

```
cscript %TOPAZ_HOME%\opr\bin\oprcfg-configuration.vbs -setup omi -noGW
```

- Run the following command to start the BSM services:

On Linux:

```
/opt/HP/BSM/scripts/run_hpbsm start
```

On Windows:

```
%TOPAZ_HOME%\bin\SupervisorStart.bat
```

Installing Additional Software Update on BSM GWS

To install the additional software update on BSM GWS running in a distributed BSM environment, follow these steps:

1. Run the following commands to check the version of the current `opr-config-server.war` file:

On Linux:

```
cd /opt/HP/BSM/opr/webapps
/opt/HP/BSM/opr/support/what.sh ./opr-config-server.war
```

On Windows:

Go to the drive where BSM is installed:

```
cd /d %TOPAZ_HOME%\opr\webapps
cscript %TOPAZ_HOME%\opr\support\what.vbs opr-config-server.war
```

Note: If the version number is lower than 09.23.174, then proceed to the next step. If the version number is 09.23.174 or higher, then the current BSM installation already contains the required software update and you do not need to perform the remaining steps in this section.

2. Run the following command to stop the BSM services running on BSM GWS:

On Linux:

```
/opt/HP/BSM/scripts/run_hpbsm stop
```

On Windows:

```
%TOPAZ_HOME%\bin\SupervisorStop.bat
```

3. Take a backup of the existing `opr-config-server.war` file which exists in the following folder:

On Linux:

```
/opt/HPBSM/opr/webapps
```

On Windows:

```
%TOPAZ_HOME%\opr\webapps
```

The `opr-config-server.war` file must be backed up to a different folder.

4. Extract the `HP0prMA_update.zip` to a temporary folder and copy `opr-config-server.war` to the following folder:

On Linux:

```
/opt/HPBSM/opr/webapps
```

On Windows:

```
%TOPAZ_HOME%\opr\webapps
```

5. Run the following command to deploy the new WAR file from the extracted ZIP file:

On Linux:

```
/opt/HP/BSM/opr/bin/oprcfg-configuration.sh -setup omi
```

On Windows:

```
cscript %TOPAZ_HOME%\opr\bin\oprcfg-configuration.vbs -setup omi
```

6. Run the following command to start the BSM services:

On Linux:

```
/opt/HP/BSM/scripts/run_hpbsm start
```

On Windows:

```
%TOPAZ_HOME%\bin\SupervisorStart.bat
```

Installing Additional Software Update in a Typical BSM Environment

In a typical BSM environment, the BSM DPS and BSM GWS are available in the same system. To install the additional software update in a typical BSM environment, perform the following steps:

1. Run the following commands to check the version of the current `opr-config-server.war`:

On Linux:

```
cd /opt/HP/BSM/opr/webapps
/opt/HP/BSM/opr/support/what.sh ./opr-config-server.war
```

On Windows:

Go to the drive where BSM is installed:

```
cd /d %TOPAZ_HOME%\opr\webapps
cscript %TOPAZ_HOME%\opr\support\what.vbs opr-config-server.war
```

Note: If the version number is lower than 09.23.174, then proceed to the next step. If the version number is 09.23.174 or higher, then the current BSM installation already contains the required software update and you do not need to perform the remaining steps in this section.

2. Run the following command to stop the BSM services running on BSM Server:

On Linux:

```
/opt/HP/BSM/scripts/run_hpbsm stop
```

On Windows:

```
%TOPAZ_HOME%\bin\SupervisorStop.bat
```

3. Take a backup of the existing `opr-config-server.war` file which exists in the following folder:

On Linux:

```
/opt/HPBSM/opr/webapps
```

On Windows:

```
%TOPAZ_HOME%\opr\webapps
```

The `opr-config-server.war` file must be backed up to a different folder.

4. Extract the `HP0prMA_update.zip` to a temporary folder and copy `opr-config-server.war` to the following folder:

On Linux:

```
/opt/HPBSM/opr/webapps
```

On Windows:

%TOPAZ_HOME%\opr\webapps

5. Run the following command to deploy the new WAR file from the extracted ZIP file:

On Linux:

```
/opt/HP/BSM/opr/bin/oprcfg-configuration.sh -setup omi
```

On Windows:

```
cscript %TOPAZ_HOME%\opr\bin\oprcfg-configuration.vbs -setup omi
```

6. Run the following command to start the BSM services:

On Linux:

```
/opt/HP/BSM/scripts/run_hpbsm start
```

On Windows:

```
%TOPAZ_HOME%\bin\SupervisorStart.bat
```

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Feedback on Installation Guide (OMi Management Pack for JBoss Application Server 1.00)

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We appreciate your feedback!