OMi Management Pack for Apache Web Server

Software Version: 1.00

Operations Manager i for Linux and Windows® operating systems

Installation Guide

Hewlett Packard Enterprise

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Chapter 1: Introduction

The OMi Management Pack for Apache Web Server (OMi MP for Apache Web Server) works with Operations Manager i (OMi) and enables you to monitor Apache Web Servers operating in your environment. The Apache Web Server accepts requests from a web browser and responds by serving web pages to the web browser. It can support requests for both static and dynamic content. The Apache Web Server provides virtual hosting which allows the server to run multiple websites on a single machine. The OMi MP for Apache Web Server includes the following components for monitoring health and status of Apache Web Servers:

- Apache Web Server Management Template
- Apache Web Server Aspects
- Parameters
- Policy Templates
- Run-time Service Model (RTSM) View
- Event Type Indicators (ETIs)
- Health Indicators (HIs)
- Topology Based Event Correlation (TBEC) Rule
- Graph Templates
- Tools

Note: For more information about the components, see the *OMi Management Pack for Apache Web 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 Apache Web Server	OMi Management Pack for Apache Web Server

Related Documentation

For more information about OMi MP for Apache Web Server, see the following documents:

- OMi MP for Apache Web Server - *Release Notes*

- OMi MP for Apache Web Server - *User Guide*

Licensing

No separate license is required for OMi MP for Apache Web Server.

Chapter 2: Installing OMi MP for Apache Web Server

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

Installation Media

The following section provides information about the installation media for OMi MP for Apache Web Server. The OMi MP for Apache Web Server is available in the OMi MP for Apache Web Server DVD (MPDVD) and also through electronic media (e-media). The MPDVD and e-media are available for English and Non-English locale environments. You can use the appropriate installation media based on your locale requirements.

Product	Marketplace links
OMi MP for Apache Web Server	Unified Marketplace

The OMi MP for Apache Web Server DVD and e-media contains the software and the product documentation. In a distributed environment, it must be installed on all BSM or OMi Data Processing Servers (DPS) and BSM or OMi Gateway Servers (GWS).

The following table provides information about the documentation available in the MPDVD and the e-media:

Document	Location	Purpose
Online Help	Available in the BSM console **Help** menu. From the BSM console, go to **Help > BSM Help > Application Administration > Operations Management > OMi Management Pack for Apache Web Server** Available in the OMi console ? menu. From the OMi console, go to ? **> General Help > Administration Guide > Management Packs > OMi Management Pack for Apache Web Server**.	To provide information about the following: • Using Apache Web Server Management Template • Using Apache Web Server Aspects and Policy Templates • Using Indicators - HIs and ETIs

Document	Location	Purpose
Installation Guide	<MPDVD>\DOCUMENTATION\en	
User Guide	<MPDVD>\DOCUMENTATION\en	
Release Notes	<MPDVD>\DOCUMENTATION\en	To provide information about the following: • Salient Features • Installation Notes

Installation Prerequisites

The following section lists the hardware and software prerequisites for installing OMi MP for Apache Web Server on BSM 9.2x and OMi 10.x (Linux and Windows) Servers.

Software Requirements

Before installing OMi MP for Apache Web Server, the following components must be installed and configured on BSM 9.2x servers (Linux and Windows) and OMi 10.x servers (Linux and Windows).

Component	Version
BSM	9.23 or later*
Monitoring Automation	9.23 or later*
Operations Manager i	9.23 or later*
OMi MP for Infrastructure	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*

Note: * For more information about Support Matrix, see

https://softwaresupport.hpe.com/km/KM323488.

Installation Checklist

Make sure 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.

Server

Serial	Task	Reference
1	Check the Installation Prerequisites for BSM	See the chapter *General Prerequisites* in the *BSM Installation Guide*.
2	Install BSM version 9.20 and the BSM 9.23 or higher Service Pack	See the following chapters in the *BSM Installation Guide*: • *Install BSM 9.20* • *Install the latest BSM 9.2x Minor Minor Release and Patch*
3	Install Monitoring Automation version 9.23 or higher	See the chapter *Installing Monitoring Automation* in the *Operations Manager i Monitoring Automation Installation Guide*.
4	Verify the Monitoring Automation installation	See the chapter *Verifying the Installation* and *Using Monitoring Automation* in the *Monitoring Automation for Operations Manager i Installation Guide*.
5	Install Additional Software Update for Monitoring Automation 9.23 **Note:** If you are installation OMi MP for Microsoft Active Directory on BSM 9.23, you must install additional software update for Monitoring Automation 9.23.	See the section "Installing Additional Software Update for Monitoring Automation 9.23".
6	Clean up OMi MP for Infrastructure version 1.00	If OMi MP for Infrastructure version 1.00 is already installed, see *Removing OMi MP for Infrastructure version 1.00* in the *OMi Management Pack for Infrastructure 1.10 Installation Guide*.

Serial	Task	Reference
7	Install OMi MP for Infrastructure 1.10	See the chapter *Installing OMi MP for Infrastructure 1.10* in the *OMi Management Pack for Infrastructure 1.10 Installation Guide*.
8	Setting Default Display Label for Apache Web Server CI Types	See the section "Setting the Default Display Label for Apache Web Server CI Types".
9	Install OMi MP for Apache Web Server 1.00	See the section "Installing OMi Management Pack for Apache Web Server version 1.00 on BSM or OMi".

Managed Node

Task	Reference
Install Operations Agent 11.12 or higher	See the chapter *Installing the Operations agent 11.12* in the *Operations Agent and Operations Smart Plug-ins for Infrastructure Installation Guide*.
Configure the main Apache Configuration File	See the section "Modify the Apache Web Server Configuration File".

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 Apache Web 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"*.

Setting the Default Display Label for Apache Web Server CI Types

You must add `name` as part of the default display label for Apache Web Server CIT.

To set Default Display Label for Apache Server, follow these steps:

1. Open CI Type Manager pane:

   On BSM 9.2x, click **Admin > RTSM Administration > CI Type Manager**.

   On OMi 10.x, click **Administrator > RTSM Administration > CI Type Manager**.

2. Go to CI Types pane and select **CI Types** from drop down menu.

3. Go to **Managed Object > Configuration Item > Infrastructure Element > Running Software > Web Server > Apache**.

4. From the right pane, select the **Default Label** tab. The CI Type Label Definition Format pane opens.

5. Add `name` as the first entry in the CI Type Label Definition Format pane.

   For example, `(name|product_name|discovered_product_name|description|root_class)` `&root_container_name`

6. Save the changes.

Modify the Apache Web Server Configuration File

To monitor the Apache Web Server in your environment, you must edit the main Apache Web Server configuration file.

> **Note:** The changes mentioned in the steps 1 to 6 must be performed on the main `httpd.conf` file. The current version of OMi MP for Apache Web Server does not support `include directives` in the `httpd.conf` file.

To configure the `httpd.conf` file, follow these steps:

1. The OMi MP for Apache Web Server parses the Listen directive to identify the port through which monitoring is performed.

   For Example, `Listen 80`

   > **Note:** IPv6 addresses must be enclosed in square brackets, as in the following example:
   >
   > Listen [2001:db8::a00:20ff:fea7:ccea]:80
   >
   > The monitoring solution connects to the port mentioned in the Listen directive to collect Apache Web Server performance metrics.

   > **Caution:** It is mandatory to specify the `Listen` directive with a valid port number for the Apache Web Server to function.

2. To compute the Apache Web Server response-time, you must suffix the *CustomLog* file entry with ###%D### as depicted in the following example:

   ```
   <IfModule log_config_module>
   LogFormat "%h %l %u %t \"%r\" %>s %b ###%D###" common
   CustomLog "logs/access_log" common
   </IfModule>
   ```

   Apache Web Server logs the response time in micro seconds when the %D entry is provided. OMi MP for Apache Web Server parses the pattern mentioned to compute the response time.

3. To get the server-status information, you must provide access to the loop-back server address as mentioned in the following example:

   Loop-back address:

   For IPv4:

   127.0.0.1

   For IPv6:

   ::1

   > **Note:** The monitoring solution connects to the loop-back address and port specified in the `Listen` directive to collect the performance metrics. It is important to turn ON the **ExtendedStatus** directive to enable collection of all the performance metrics.

   ```
   <Location /server-status>
   SetHandler server-status
   Order Deny,Allow
   Deny from all
   ```

```
Allow from 127.0.0.1
</Location>
ExtendedStatus On
```

> **Note:** You must ensure that the `mod_status` module is loaded as part of Apache Web Server configuration. This is required to retrieve the performance metrics from Apache Web Server using the `ExtendedStatus On` flag.

4. To monitor the ErrorLog for server errors using the OMi MP for Apache Web Server log monitoring policy, you must have an entry for ErrorLog in the `httpd.conf` file.

   For Example, `ErrorLog "logs/error_log"`

5. OMi MP for Apache Web Server identifies the virtual hosts configured using the ServerName directive in the virtual host block as shown in the following example:

   ```
   <VirtualHost *:80>

   ServerName vh1.example.com

   DocumentRoot /srv/www

   </VirtualHost>
   ```

6. Save the configuration file changes. Restart the Apache Web Server.

Installing OMi Management Pack for Apache Web Server version 1.00 on BSM or OMi

You can use the e-media or MPDVD to install the OMi MP for Apache Web Server on BSM or OMi Server (Linux or Windows). The following section provides information about installing the OMi MP for Apache Web Server on the BSM 9.2x or OMi 10.x Server.

> **Note:** In a BSM 9.2x or OMi 10.x distributed environment, OMi MP for Apache Web Server must be installed on all BSM or OMi Servers - (BSM or OMi) DPS and (BSM or OMi) GWS.
> For BSM 9.2x, you must make sure that Monitoring Automation is running before proceeding with the installation. To check the status, log on to BSM console and navigate to **Admin > Setup and Maintenance > Server Deployment** and then check if Monitoring Automation is enabled.

On a Linux BSM 9.2x or OMi 10.x Server

To install the OMi MP for Apache Web Server on a Linux BSM 9.2x or OMi 10.x Server, follow these steps:

1. Log on as a `root` user.

2. Set the umask by typing the command `umask 022`.

3. Create a directory to mount the DVD or e-media by typing the command `mkdir /<mount_point>`.

   For example: `mkdir /dvdrom`

4. Insert the DVD into the disk drive or you can copy the e-media installation package and mount using the following commands:

   For DVD: `mount  /dev/<dvdrom_drive_name> /<mount_point>`

   For e-media: `mount -o loop <e-media> /<mount_point>`

5. Change the directory to `/<mount_point>`.

6. Run the following command:

   `<PATH>/mpinstall.sh -i`

   Based on the locale, you can see the following table and run the command accordingly:

E-media	MP locale same as BSM locale	MP locale different from BSM locale
English e-media	`./mpinstall.sh -i`	`./mpinstall.sh -i`
Non-English e-media	`./mpinstall.sh -i`	`./mpinstall.sh -i -locale <mplocale>`

   For example, to install OMi MP for Apache Web Server in the Simplified Chinese locale with BSM in a non Simplified Chinese locale, specify the following command:

   `./mpinstall.sh -i -locale zh_CN`

   > **Note:** You can use the following command options:
   >
   > `./mpinstall.sh -i [-locale <MP Locale>] [-h|help]`
   >
   > `-i` : Install Management Pack.
   >
   > `-locale`: Locale specific Management Pack to install.

> `-h|-help`: Shows the help message.
>
> You can specify the `<mplocale>` as follows:
>
> ○ `zh_CN`: Simplified Chinese locale
>
> ○ `ja`: Japanese locale

7. To accept the End User License Agreement (EULA), type **Yes** or **Y** and to decline the license agreement, type **No** or **N**.

   > **Note:** If you decline the EULA, the OMi MP for Apache Web Server will not be installed.

   After the installation is completed, a message appears stating that the installation of OMi Management Pack for Apache Web Server is completed.

On a Windows BSM 9.2x or OMi 10.x Server

To install the OMi MP for Apache Web Server on a Windows BSM 9.2x or OMi 10.x Server, follow these steps:

1. Insert the DVD into the disk drive or you can copy the ZIP file to the BSM or OMi Server and extract it.

2. Open the command prompt, change the directory to <DVD- ROM> or to folder that has the installer script and run the following command:

   `cscript mpinstall.vbs -i`

   Based on the locale, you can see the following table and run the command accordingly:

E-media	MP locale same as BSM locale	MP locale different from BSM locale
English e-media	`cscript mpinstall.vbs -i`	`cscript mpinstall.vbs -i`
Non-English e-media	`cscript /nologo mpinstall.vbs -i`	`cscript /nologo mpinstall.vbs -i -locale <mplocale>`

   For example, to install OMi MP for Apache Web Server in Simplified Chinese locale with BSM in a non Simplified Chinese locale, specify the following command:

```
cscript /nologo mpinstall.vbs -i -locale zh_CN
```

> **Note:** You can use the following command options:
>
> ```
> cscript /nologo mpinstall.vbs -i [-locale <MP Locale>] [-h|help]
> ```
>
> `-i`: Install Management Pack.
>
> `-locale` : Locale specific Management Pack to install.
>
> `-h|-help`: Shows the help message.
>
> You can specify the `<mplocale>` as follows:
>
> ○ `zh_CN`: Simplified Chinese locale
>
> ○ `ja`: Japanese locale

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 that the installation of OMi Management Pack for Apache Web Server is completed.

Verifying the OMi MP for Apache Web Server Installation

This section provides information about verifying the installation of OMi MP for Apache Web 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 Apache Web 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:

  o On BSM 9.2x, click **Admin > Operations Management > Setup > Content Packs**.

    The **OMi Management Pack forApache Web Server** must appear in the Content Pack Definitions pane.

  o On OMi 10.x, click **Administration > Setup and Maintenance > Content Packs**.

    The **OMi Management Pack for Apache Web 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.

Chapter 3: Getting Started

The following section provides step-by-step instructions about deploying out-of-the-box components of OMi MP for Apache Web Server for monitoring Apache Web Server environments using the BSM or OMi console.

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

> **Note:** If the Node already exists in RTSM, you can skip this step and proceed to "Task 3: Deploying the Apache WS Discovery Aspect".

Before you begin monitoring, you need to add the nodes to the BSM or OMi console.

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 then click ✳ and then click **Computer >** or **Unix**. 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 RTSM.

   > **Note:** The node with Operations Agent needs to be activated to OMi server and certificate needs to be granted.

Task 2: Enabling the Enrichment Rules

You must enable the following enrichment rules to populate the CI's display label with additional information about container or the hostname:

- SoftwareElementDisplayLabelForNewHost

- SoftwareElementDisplayLabelForExistingHost

- SoftwareElementDisplayLabelPopulator

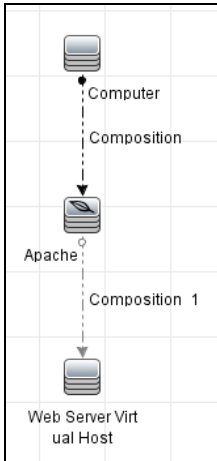To enable the Enrichment Rules, follow these steps:

1. Open the Enrichment manager:

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

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

2. In the Enrichment Rules pane, select **SoftwareElementDisplayLabelForNewHost** from the list.

3. Right-click and select **Properties**. The Enrichment Rule Properties window appears.

4. Click **Next**.

5. Select **Rule is Active**.

6. Click **Finish**.

7. In the Enrichment Rules pane, click to save the changes.

8. Select **SoftwareElementDisplayLabelForExistingHost** and repeat steps 3 to 7.

9. Select **SoftwareElementDisplayLabelPopulator** and repeat steps 3 to 7.

Task 3: Deploying the Apache WS Discovery Aspect

The Apache WS Discovery Aspect enables you to discover Apache Web Server instances in your environment. To discover the Apache Web Server CIs on the added managed nodes, you must deploy the Apache WS Discovery Aspect to a Computer CI.

The Apache WS Discovery Aspect deployment discovers the CIs of the following CI Types (CITs):

- Apache

- Web Server Virtual Host

- Computer

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 > Web Server Management > Apache Web Server Management > Aspects.

3. In the Management Templates & Aspects pane, click **Apache WS Discovery** Aspect, and then click **Assign and Deploy Item**. The Assign and Deploy Item wizard opens.

4. In the **Configuration Item** tab, select the configuration item to which you want to deploy the Apache WS Discovery Aspect and then click **Next**. The **Required Parameters** tab opens.

5. *(Optional).* In the **Required Parameters** tab, click **Next**.

   > **Note:** Apache WS Discovery Aspect does not have mandatory parameters. You will get a notification stating the following:
   > ```
   > There are no parameters that require editing for this Assignment.
   > ```

6. *(Optional).* In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, click **Next**.

7. *(Optional).* 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**.

> **Note:** After the Apache WS 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 4: Verifying Discovery

After you deploy the Apache WS Discovery Aspect, you must verify if the CIs are populated in the View Explorer.
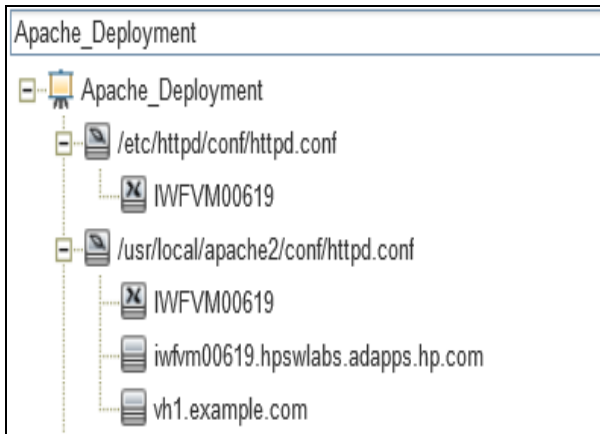
To view the discovered CIs, follow these steps:

1. Open the Event Perspective pane:

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

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

2. In the **Browse Views** tab, select the **Apache_Deployment** View.

Task 5: Deploying the Apache Web Server Management Template or the Apache Web Server Aspects

This section provides information about data collection and deploying management template and aspects. For more information about deploying the Apache Web Server Management Templates, go to "Task 5a: Identifying and Deploying Management Template". For more information about deploying the Apache Web Server Aspects, go to "Task 5b: Deploying Apache Web Server Aspects".

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 following two 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 *Editing Parameters in the OMi MP for Apache Web Server User Guide*.

Task 5a: Identifying and Deploying Management Template

You can deploy the Apache Web Server Management Template to monitor the features such as the performance and availability of the Apache Web Servers.

To deploy the Apache Web Server Management Template to the CIs, 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, select the following:

   Configuration Folders > Web Server Management > Apache Web Server Management > Management Templates

3. In the Management Templates & Aspects pane, click the **Essential Apache Web Server Management Template**, and then click ⚜**Assign and Deploy Item**. The Assign and Deploy wizard opens.

4. In the **Configuration Item** tab, select the Apache CI to which you want to assign the Management Template, and then click **Next**.

5. *(Optional).* In the **Required Parameters** tab, click **Next**.

   > **Note:** Apache Web Server Management Template does not have mandatory parameters. You will get a notification stating the following message:
   > `There are no parameters that require editing for this Assignment.`

6. *(Optional).* 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**.

> **Note:** The Apache WS Discovery Aspect is a part of the Essential Apache Web Server Management Template.

Task 5b: Deploying Apache Web Server Aspects

To deploy Apache Web Server Aspects to the CIs, 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, select **Configuration Folders > Web Server Management > Apache Web Server Management > Aspects**.

3. In the Management Templates & Aspects pane, select the Aspect you want to deploy, and then click ![icon]**Assign and Deploy Item**. The Assign and Deploy wizard opens.

4. In the **Configuration Item** tab, select the Computer CI to which you want to assign the Aspect and then click **Next**.

   > **Note:** If you want to deploy Aspects to Node CIs, select **Also Show CIs of type Node** check box.

5. *(Optional).* In the **Required Parameters** tab, click **Next**.

   > **Note:** Apache Web Server Aspects do not have mandatory parameters. You will get a notification stating the following message:
   > ```
   > There are no parameters that require editing for this Assignment.
   > ```

6. *(Optional).* 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**.

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.

2. 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

3. 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.

4. Extract the HPOprMA_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

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 -noGW

   On Windows:

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

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 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 `HPOprMA_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 `HPOprMA_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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