HP Operations Smart Plug-in for Microsoft® Exchange Server

for HP Operations Manager for Windows®

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Installation and Configuration Guide

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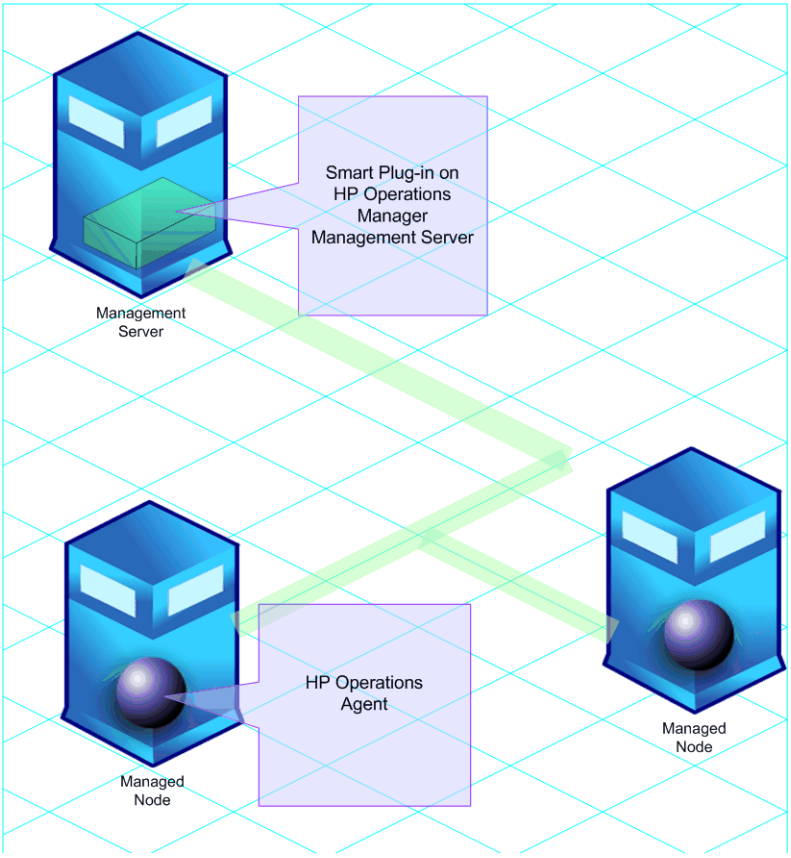
1 Introducing Smart Plug-in for Microsoft Exchange Server

Smart Plug-in (SPI) is plug-in or add-on software for HP Operations Manager (HPOM). It functions as a modular component of HPOM and improves the monitoring capabilities in managing your IT resources. SPIs help to simplify the tasks of your environment by:

- Monitoring availability and health
- Detecting performance lapse
- Detecting, preventing, and solving problems
- Documenting problem solutions
- Generating reports

Figure 1 HPOM Client Structure Architecture



Smart Plug-in for Microsoft Exchange Server

The HP Operations Smart Plug-in for Microsoft Exchange Server (Microsoft Exchange SPI) helps you to manage the Microsoft Exchange Server in your environment. The Microsoft Exchange SPI provides updates about conditions related to the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010 and provides information on the following:

- Availability of Microsoft Exchange Server and its roles
- Monitoring events that occur on Microsoft Exchange Servers
- Monitoring functions of different Microsoft Exchange Servers
- Monitoring and reporting important metrics like Mail Flow Latency, Transport Agent Queue Lengths, Information Store DB Cache Size, and SPAM Statistics among others
- Providing ExBPA Integration

The Microsoft Exchange SPI helps you to oversee your distributed Microsoft Exchange environment from a central, simple console. You can apply the performance and problem management processes that you use for networks and systems to monitor Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010. The Microsoft Exchange SPI:

- Increases Microsoft Exchange availability and performance.
- Reduces support costs associated with the Microsoft Exchange services.
- Improves capacity management and planning for Microsoft Exchange.

Components of Microsoft Exchange SPI

The components of Microsoft Exchange SPI are policies, tools, reports, and graphs. Each of these components contributes to enhance the monitoring capability of the SPI.

Policies

Policies are the pre-defined thresholds to monitor the Microsoft Exchange Server environment. These policies help in improving monitoring schedules in the form of service map alerts and messages. Service map alerts are shown in service map and messages are available in the message browser. For more information on policies, see Chapter 4, Using Policies.

Tools

Tools are the utilities to configure and gather more Microsoft Exchange Server related information. The Microsoft Exchange SPI tools enable you to perform specified tasks on managed nodes to simplify monitoring the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010. Tools are also used to configure the Microsoft Exchange SPI. For more information on tools, see Chapter 5, Tools.

Reports

Reports are the pictorial representations of various metrics of the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010. Data collected by the Microsoft Exchange SPI policies are used to generate reports. For more information about reports, see Chapter 6, Integrating Microsoft Exchange SPI with Reporting and Graphing Solutions.

Graphs

Graphs represent the various metrics of the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010. Graphs can be in the form of line graphs, bar charts, and pie charts. For more information about graphs, see Chapter 6, Integrating Microsoft Exchange SPI with Reporting and Graphing Solutions.

Reports and graphs are generated using HP Reporter and HP Performance Manager. The reports and graphs provide an overview of problems and actions to be taken.

For more information, see *HP Operations Smart Plug-in for Microsoft Exchange Server Online Help* or *HP Operations Smart Plug-in for Microsoft Exchange Server Online Help* PDF.

Functions of Microsoft Exchange SPI

After configuring the Microsoft Exchange SPI, you can view critical information about the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010 environments using the HPOM console. This information is presented in the form of any of the following:

- Service Map View
- Message Browser
- Reports and Graphs
- Operations Topology Viewer Tool
- EXSPI Configuration Utility Tool

Service Map View

The map view of HPOM presents a graphical and structural view of the Microsoft Exchange Server in your environment. The Microsoft Exchange SPI discovers the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010 services and nodes and shows them in the map view. The map view displays the near real-time status of your Microsoft Exchange Server environment.

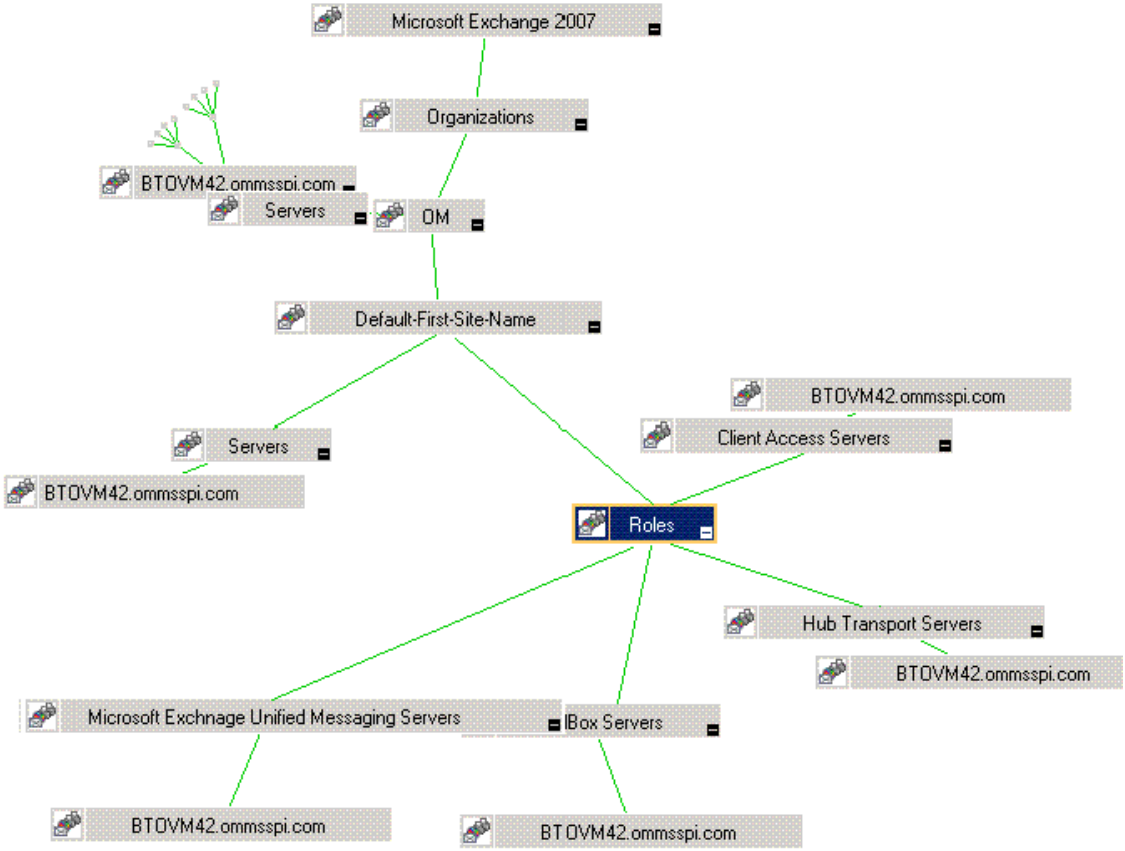
Map views are available only on console systems running a 32-bit version of HPOM.

Viewing Service Map

To view the service map, follow these steps:

1. In the HPOM console, click **Services**. The Service Map appears on the right pane.
2. Expand the hierarchy to view the services under the respective Microsoft Exchange Server.

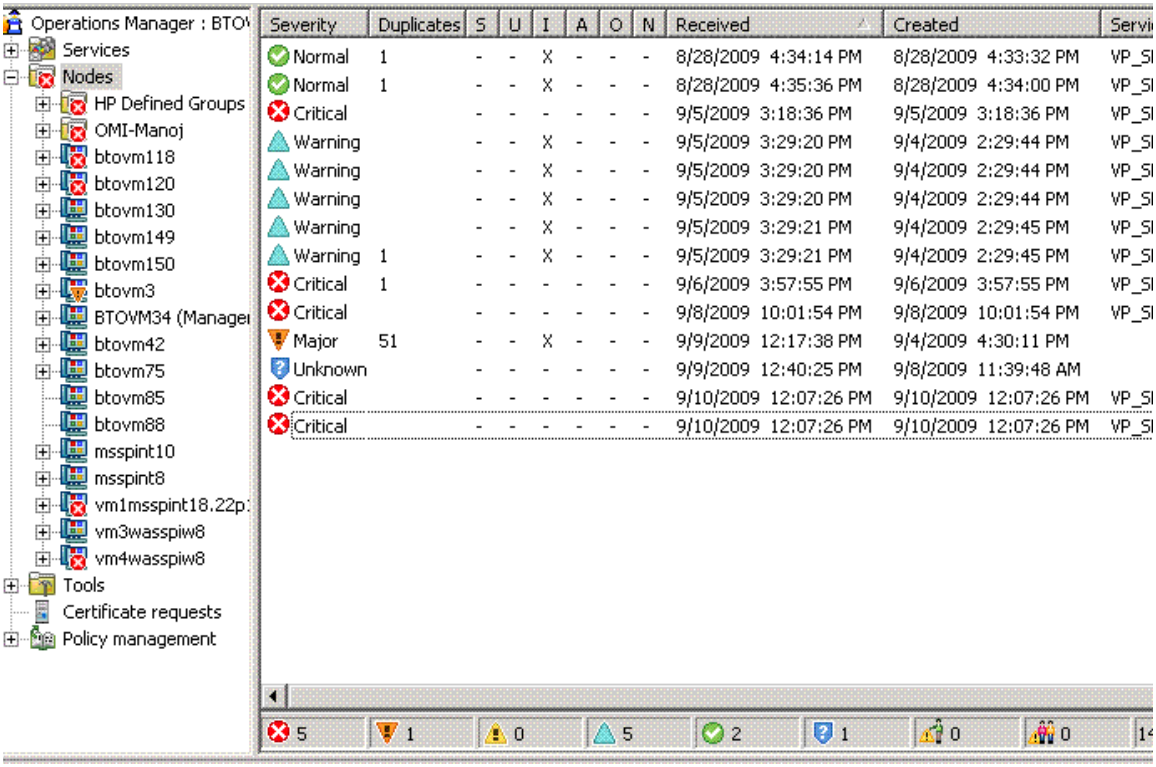
The following figure shows the expanded services of the Microsoft Exchange Server 2007.



The map view indicates severity levels of problems in the Microsoft Exchange organization, using colors (red and blue).

Message Browser

The Microsoft Exchange SPI monitors events and services on the managed nodes (servers on which the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010 are installed and the HP Operations agent is deployed) and generates messages, which are displayed on the message browser of HPOM console.



The Microsoft Exchange SPI has the following message groups:

For Microsoft Exchange Server 2007

- EXSPI_2007: Contains alerts from Microsoft Exchange SPI policies related to the Exchange server status.
- EXSPI_2007_Errors: Contains alerts related to the Microsoft Exchange SPI code exceptions and errors that occur during the monitoring process of the Exchange 2007 Server.

For Microsoft Exchange Server 2007

- EXSPI_2010
- EXSPI_2010_Errors

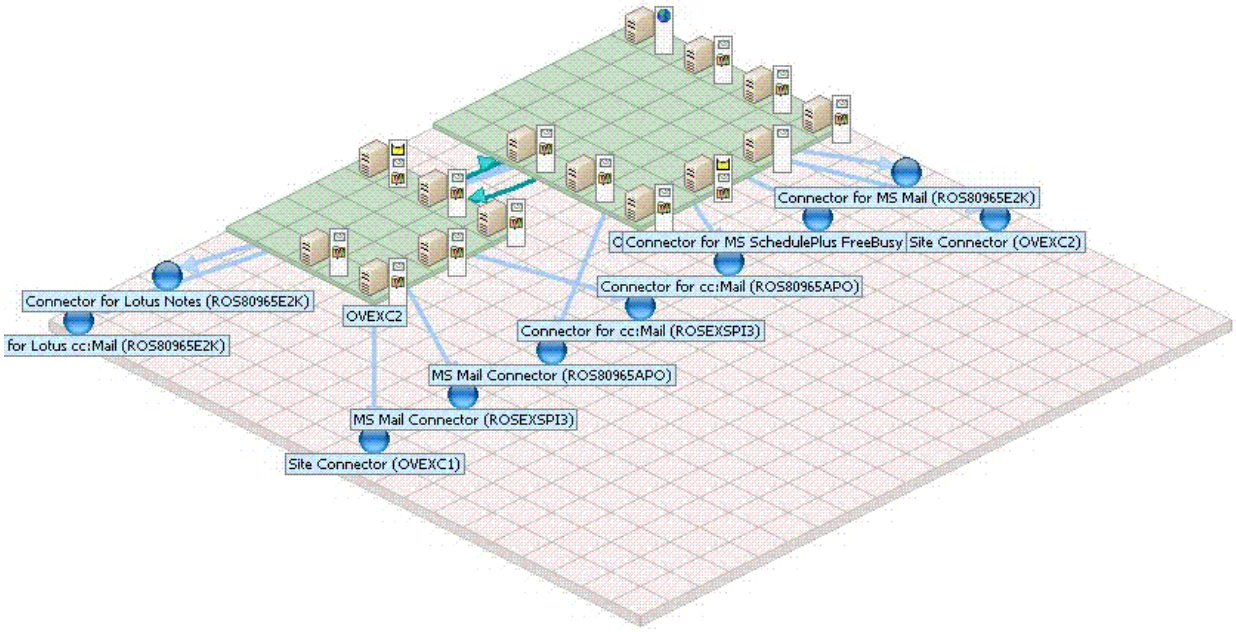
Reports and Graphs

You can integrate the Microsoft Exchange SPI with HP Reporter and HP Performance Manager to generate reports and graphs based on collected metric data. HP Reporter captures and formats data collected at nodes and generates web-based reports. HP Performance Manager generates graphs from near real-time data gathered from the managed nodes. You can access these graphs from the HPOM console if you install HP Performance Manager on HPOM management server. For more information, see Chapter 6, Integrating Microsoft Exchange SPI with Reporting and Graphing Solutions.

Operations Topology Viewer Tool

The Microsoft Exchange SPI enables you to view a Microsoft Exchange organization graphically with the help of three-dimensional maps of routing groups and server connections. From the topology view you can quickly view routing groups, Exchange servers, and the roles they play within your Exchange organization. For more information on the Operations Topology Viewer tool, see HP Operations Topology Viewer on page 64.

Figure 2 Topology View



EXSPI Configuration Utility Tool

The EXSPI Configuration Utility tool enables you to edit the collection configuration data for Microsoft Exchange SPI. You can also create new collections and metrics and can modify them, if required. For more information on the EXSPI Collection Configuration Utility tool, see Additional Configuration Procedure on page 32.

Monitoring Microsoft Exchange 2007 and 2010 Servers in SAN Environment

You can use Microsoft Exchange SPI in a Storage Area Network (SAN) environment where the high availability of Microsoft Exchange Servers ensure storage consolidation, movement towards centralized management of messaging systems, and real-time mirroring of data. The Microsoft Exchange SPI monitors these activities from the Microsoft Exchange database (Information Store) configured on external SAN storage.

2 Installing Microsoft Exchange SPI

The Microsoft Exchange SPI is packaged with the HP Operations Smart Plug-ins DVD. You must install the Microsoft Exchange SPI on the HPOM management server. This chapter describes the procedures to install the Microsoft Exchange SPI on the Management Server, remote console, and cluster environment.

Installation Packages

The Microsoft Exchange SPI installation packages include the following packages:

- SPI
- Graphing
- Reporter
- Console

SPI Package

The SPI package is the `.msi` package, which contains all the functionalities of the SPI. It must be installed on an HPOM Server. You can find the Microsoft Exchange SPI package in the following location:

```
<SPI DVD>\x64\SPIs\Exchange SPI\EXSPI-Server.msi
```

Graphing Package

The Graphing package contains the graphs provided by the SPI. Graphs are drawn from metrics that are collected in the datasources created by the SPI. You can find the Microsoft Exchange SPI graphing package in the following locations:

- `<SPI DVD>\x64\SPIs\EX SPI OVPM Configuration Package\HPOvSpiExGc.msi`
- `<SPI DVD>\x86\SPIs\EX SPI OVPM Configuration Package\HPOvSpiExGc.msi`

Reporting Package

The Reporter package contains the reports provided by the SPI. The Reporter gathers the data from the nodes managed by the SPI, stores the data in its local database, and creates .html reports based on the default SPI report policies. You can find the Microsoft Exchange SPI reporting package in the following locations:

- `<SPI DVD>\x64\SPIs\Exchange SPI Reporter Package\EXSPI-Reporter.msi`
- `<SPI DVD>\x86\SPIs\Exchange SPI Reporter Package\EXSPI-Reporter.msi`

Console Package

The Console package contains HP Operations Topology Viewer and EXSPI Configuration Utility tools. You can find the Microsoft Exchange SPI console packages in the following locations:

- For HP Operations Topology Viewer tool:
  - `<SPI DVD>\x64\SPIs\SPIs Console Packages\OVTV-Console.msi`
  - `<SPI DVD>\x86\SPIs\SPIs Console Packages\OVTV-Console.msi`
- For EXSPI ConfigurationUtility
  - `<SPI DVD>\x64\SPIs\SPIs Console Packages\EXSPI-Console.msi`
  - `<SPI DVD>\x86\SPIs\SPIs Console Packages\EXSPI-Console.msi`

Installation Overview

The following flowchart shows an overview of installing and configuring the Microsoft Exchange SPI.

Figure 3 Overview of Installation and Configuration Steps

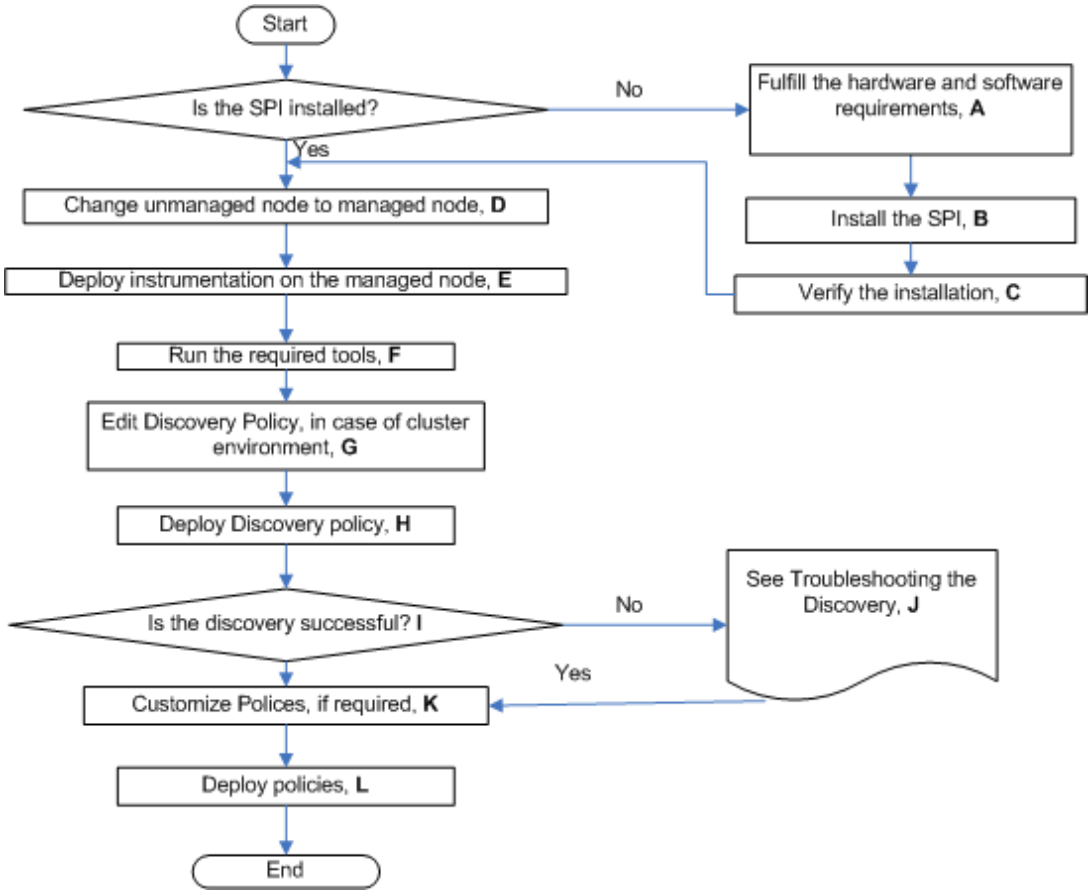


Table 1 References of Legends of Flowchart

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A	Prerequisites to Install Microsoft Exchange SPI on page 18
B	Installing Microsoft Exchange SPI on page 19
C	Verifying Installation of Microsoft Exchange SPI on page 20
D	Changing Unmanaged Node to Managed Node on page 21
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G	Editing Discovery Policy on page 30
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I	Viewing Service Map on page 31
J	Discovery on page 75
K	Customizing policies on page 27
I	Deploying Microsoft Exchange SPI policies on Managed Nodes on page 28

Installation Environments for Microsoft Exchange SPI

HPOM for Windows provide the scalable feature of monitoring enterprise application servers. SPIs are part of this scalable architecture, allowing for monitoring specific application servers.

Standard Installation of SPI Components on HPOM 9.00 Server

An HPOM for Windows 9.00 server does not have the OVPMLite and ReporterLite installed on it by default. Only the full versions of these products are available for install. As a result, through the HP Operations Smart Plug-ins DVD you can select to install only the SPI packages and not the reporter and graphing packages. However, if the full version of Reporter or Performance Manager is installed on the same machine, then the corresponding packages can be installed or uninstalled on the HPOM 9.00 server.

Standard Installation on Remote Consoles

All the Remote Console packages on the SPI DVD are installed at once on to remote consoles. No option is provided to select a particular remote console package.

Standalone HP Reporter or HP Performance Manager

For such a system only the corresponding package of any SPI is enabled and available for selection from the HP Operations Smart Plug-ins DVD. For example, if a system has only HP Reporter installed then the reporter package of any SPI could be installed on it. The same applies to the graphing package and HP Performance Manager.

Prerequisites to Install Microsoft Exchange SPI

Fulfill the hardware and software requirements before installing the Microsoft Exchange SPI. Also, ensure that you install the HPOM server before installing the Microsoft Exchange SPI. It is not necessary to stop HPOM sessions before beginning the installation of the Microsoft Exchange SPI.

Hardware Requirements

Ensure that there is at least 200 MB Free Hard-Disk space. For more information, see the *HP Operations Manager for Windows Installation Guide*.

Software Requirements

Ensure that the following software requirements are fulfilled:

- SPIs must be installed on all servers in the HPOM Windows environment. If not, SPI policy upload using the **`ovpmutil`** command results in errors.

  When synchronizing policy configuration between the management servers, install the SPIs downloaded using the **`ovpmutil`** commands - **`ovpmutil cfg all dnl`** or **`ovpmutil cfg pol dnl`**, on the target server prior to uploading the policies.

- On the management server:
  - HP Operations Manager for Windows: 9.00
  - HP Reporter: 3.90
  - HP Performance Manager: 9.00 (to generate graphs)
  - HP Operations Smart Plug-in Upgrade Tool Kit 2.03
  - HP Operations SPI Data Collector (DSI2DDF): 2.41
  - HP SPI Self-Healing Services. (SPI-SHS-OVO, automatically installed while installing the SPI using SPIDVD): 3.04
- Install HP Operations agent 11.00 on the managed node.

If you are using both HP Operations Agent and HP Performance Agent, the software versions are as follows:

- HP Operations agent 8.60 and above
- HP Performance Agent 5.00

Installing Microsoft Exchange SPI

Install the Microsoft Exchange SPI on HPOM for Windows 9.00. You can install on a remote console or on a standalone management server.

Installing Microsoft Exchange SPI Console Packages on a Remote Console

Install only the Microsoft Exchange SPI console packages on the HPOM remote consoles.

You can use the SPI DVD at the remote console to install the SPI packages located at `<SPI DVD>\<x64` or `x86>\SPIs\SPIs Console Packages` on the SPI DVD media by following these steps:

1. At the console-only system, insert the *HP Operations Smart Plug-ins DVD*.
2. Follow the instruction screens until a dialog box appears saying that a remote console installation is found.
3. Click **Next**.

The installation of the remote console packages occur.

4. Click Finish to complete the installation.

Installing SPI on a Standalone Management Server

To install the Microsoft Exchange SPI on the management server, follow these steps:

1. Insert the *Smart Plug-ins*, DVD into the DVD drive of the management server or console system. The Installation wizard opens.
2. Click **Next** to continue. The Smart Plug-ins Release Notes and Other Documentation screen appears.
3. Click **Next**. The Product Selection screen appears.
4. Click **Next**. The Enable/Disable AutoDeployment screen appears.
5. Check the **Enable** or **Disable** button and click **Next**. The License Agreement screen appears.
6. Accept the terms by selecting the option **I accept the terms in the license agreement**, and click **Next**. The Ready to Install the Program screen appears.
7. Click **Install** to begin the installation. The installation begins. The wizard installs the core SPIs, all necessary packages, and the Microsoft Exchange SPI.

Selecting the **Cancel** button after the installation has started does not halt the entire installation process, but only that of the product currently being installed (shown in the Status area); installation of the next selected product then begins.

8. Click **Finish** to complete the installation.

Installing Microsoft Exchange SPI in HPOM Cluster Environment

Before installing the Microsoft Exchange SPI in a cluster environment, make sure that HPOM for Windows 9.00 is installed on each system of the cluster.

The HPOM console does not function properly until you install the Microsoft Exchange SPI on all nodes in the HPOM cluster.

Task 1: At the first cluster-aware management server, select and install Smart Plug-ins.

Complete the steps described in Installing SPI on a Standalone Management Server before proceeding to the next management server.

Before beginning, be sure that sufficient disk space is available on each management server for the Microsoft Exchange SPI. Cancelling the installation process before completion could result in partial installations and require manual removal of the partially installed components.

Task 2: At the next cluster-aware management server, install pre-selected Smart Plug-ins.

Repeat the steps described in step 1, step 2, and step 8 in Installing SPI on a Standalone Management Server on each management server in the cluster and continue to every management server until you have finished.

Verifying Installation of Microsoft Exchange SPI

To verify if Microsoft Exchange SPI is installed properly, follow one of these steps:

- Check for Microsoft Exchange SPI under Policy groups.

  Expand **Policy Group** under **Policy Management**. If **SPI for Exchange** is available in the list, it verifies the installation.

- Verify if the policies have the version as 13.850.

- Check the `EXSPI_Install` SPI log file located at `%ovdatadir%/log/SPIInstallLogs`.

Migration of Microsoft Exchange SPI from Previous Versions

For information about migrating the Microsoft Exchange SPI from the previous versions to the latest Microsoft Exchange SPI version, see *HP Operations Smart Plug-ins DVD Release Notes*.

3 Configuring Microsoft Exchange SPI

The Microsoft Exchange SPI monitors the Microsoft Exchange Server by discovering the existing components of the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010 in your environment and maintaining the thresholds set up by the policies. After you install the Microsoft Exchange SPI, you must configure it to monitor the Microsoft Exchange Server nodes in your organization.

For information about configuring the Microsoft Exchange SPI for monitoring Microsoft Exchange Server 2010, see Configuring Microsoft Exchange SPI for Monitoring Exchange Server 2010 on page 58.

Basic Configuration

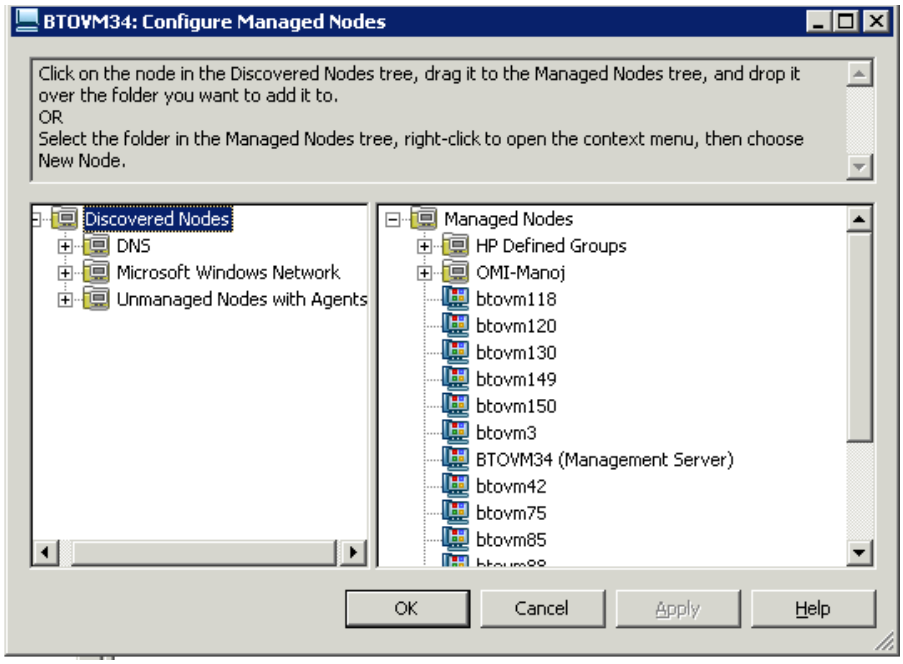
The following sections describe the procedures for configuring Microsoft Exchange SPI.

Changing Unmanaged Node to Managed Node

To change unmanaged node to a managed node, add the nodes to the HPOM console's nodes folder. By adding nodes, you can launch an automated service discovery process that duplicates the manually invoked process.

1. In the HPOM console, right-click **Nodes**, and select **Configure** → **Nodes**. The **Configure Managed Nodes** dialog box appears.
2. In the **Configure Managed Nodes** box, add the unmanaged nodes to the **Nodes** using any of the following methods:
   - In the left pane double-click each node you want to add.
   - Drag and drop nodes from left to right.

— In the left pane, right-click each node, and then select **Manage**.



If a system on which HP Operations agent is running is not available in the discovered nodes folder on the left pane, in the details pane right-click **Nodes**, select **New Node,** and then type the system name and other relevant information, and then click **OK**.

Deploying Instrumentation Categories on Managed Nodes

Deploy the following instrumentation categories for the Microsoft Exchange 2007 nodes:

- SPIDataCollector
- Exchange2k7_Core
- Exchange2k7_Collector
- Exchange2k7_Discovery

Deploy the following instrumentation categories for the Microsoft Exchange 2010 nodes:

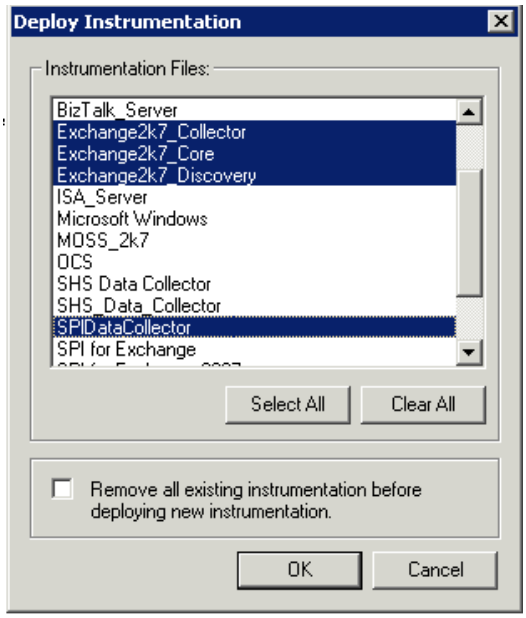
- SPIDataCollector
- Exchange2k10_Core
- Exchange2k10_Discovery

Configuration Deployment fails, if the PowerShell prompt, with EXSPI pssnapin loaded, is kept open on managed node.

To deploy instrumentation, follow these steps:

1. In the HPOM console, right-click a node and select **All Tasks** → **Deploy instrumentation...**. The **Deploy Instrumentation** dialog box opens.
2. Select the mandatory instrumentation category, **SPIDataCollector**.
3. Select the applicable categories for the respective Microsoft Exchange Server.

The following figure shows the categories selected for Microsoft Exchange Server 2007.



If you are redeploying the instrumentation categories and want to remove all the previously deployed instrumentation categories from the managed nodes, select the **Remove all existing instrumentation before deploying new instrumentation** check box.

4 Click **OK**.

5 Perform steps 1 through 4 for all the other Microsoft Exchange managed nodes.

Redeploying Instrumentation Categories on Managed Nodes (Only for Exchange 2007 server)

If you are upgrading the Microsoft Exchange SPI or deployed a wrong instrumentation category on the managed node, you must redeploy the instrumentation. Before redeploying the instrumentation on the Exchange 2007 managed nodes, follow these steps:

Configuration Deployment fails, if the PowerShell prompt, with EXSPI pssnapin loaded, is kept open on managed node.

1 Disable the **EXSPI-8X Check Collector Server** policy in the Exchange 2007 server.

2 From the HPOM console, run the **Stop PowerShell Collector** tool and select the Exchange 2007 server.

3 Redeploy the instrumentation. For more information on how to deploy instrumentation, see Deploying Instrumentation Categories on Managed Nodes on page 22.

4 From the HPOM console, run the **Start PowerShell Collector** tool and select the Exchange 2007 server.

5 Enable the **EXSPI-8X Check Collector Server** policy in the Exchange 2007 server. For more information about the credentials to set for the policy, see Credentials for EXSPI-8X Check Collector Server Policy on page 25.

Running Tools - Create DataSources, Register DataCollector, and Start PowerShell Collector

Run the following MicrosoftExchange SPI tools in each Microsoft Exchange node in the following order:

1. *Create Data Sources:* The Create Data Sources tool creates databases either into the HP Operations agent data store (embedded performance component - also known as CODA), or into the HP Performance Agent. For more information about running tools, see Starting Microsoft Exchange Tools on page 63.

   If you do not have the HP Performance Agent installed in your environment, the tool creates databases into the data store (CODA). The data store can store the data collected by individual collectors.

   If the managed node has both HP Performance Agent and CODA installed, then to create the data source in CODA, create an empty nocoda.opt file, and then customize the Create DataSources tool cmdline by adding -CODA option before you start the tool

   For more details, see Creating Data Sources.

   This tool checks for any existing EXSPI datasource. If no datasource exists, it displays an error message. This error message, however, can be ignored as the Create Data Sources tool continues to create a new EXSPI datasource.

2. *Register DataCollector:* The Register DataCollector tool registers necessary COM components on the nodes. Run this tool before you start monitoring the nodes. For more information about running tools, see Starting Microsoft Exchange Tools on page 63.

3. *Start PowerShell Collector*

   The Start PowerShell Collector tool starts the EXSPI Collector on the Microsoft Exchange node.

Before you start this tool, run the Edit XPL Configuration File tool. This tool enables the PowerShell Collector tool to run as non-agent user.

For more information about running tools, see Starting Microsoft Exchange Tools on page 63.

By default, the Start PowerShell Collector tool is set to run as SYSTEM user. When you run this tool for the first time, configure it to run as a user with the following privileges:

- Exchange View-Only Administrator
- Exchange Server Administrator of all mailbox servers
- Local Administrator of all mailbox servers and
- READ+WRITE access to Microsoft Exchange System Object (MESO) of all mailbox servers

To grant READ+WRITE access to MESO to the user:

a. Open Active Directory Users & Computers snap-in on the DC of the domain to which the Microsoft Exchange Server is a member.

b. Ensure that **View** → **Advanced Features** is selected.

c. Browse to Microsoft Exchange Systems Objects container, right-click, and select **Properties.**

d. Click **Security** tab, and then click **Advanced**.

e Select **Add** button, type the name of user account to be delegated, and then click **OK**.

f In the Apply to Drop down list, select **msExchSystemMailbox objects**.

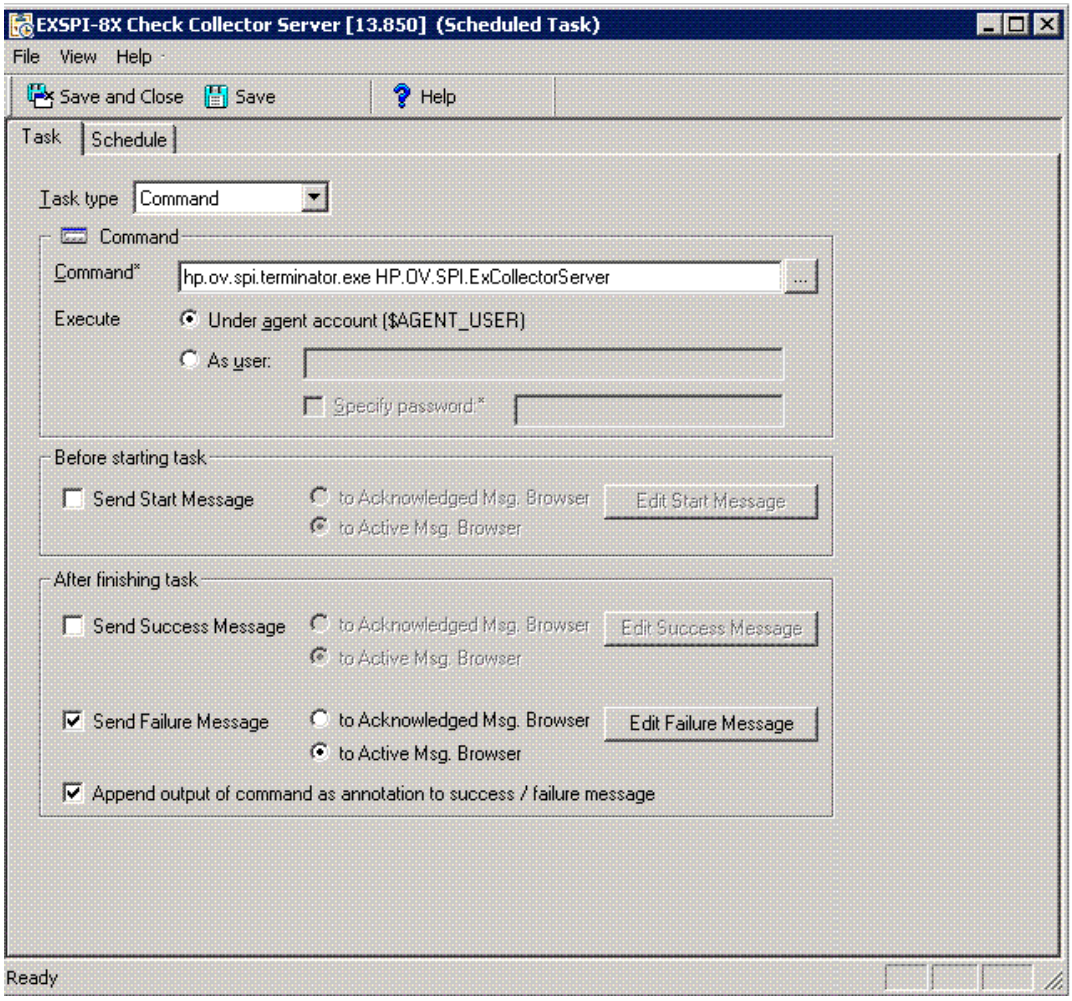
g Select the **READ PROPERTY & WRITE PROPERTY** check box.

h Click the consequent **OK** buttons to close all the property sheets.

i Wait for or force the AD replication.

Credentials for EXSPI-8X Check Collector Server Policy

You must specify the same credentials of the user who starts the Start PowerShell Collector tool for the policy EXSPI-8X Check Collector Server. For more information about the privileges of the user, see Start PowerShell Collector.



To set the credentials for the policy, select **As User,** provide the credentials of the user, and save the policy.

Credentials for Collection Policies (Only for Microsoft Exchange 2010 Policies)

Modify the policies listed in the following table to run as user with the following privileges:

User Privileges:

- Local Administrator of Microsoft Exchange Server 2010
- Server Management
- View-Only Organization Management
- Records Management

Table 2 Policies

EXSPI-14X-Dc-EdgeAgentLogBlockedData
EXSPI-14X-Dc-EdgeAgentLogBlockedRcpts
EXSPI-14X-Dc-HubAgentLogBlockedData
EXSPI-14X-Dc-HubAgentLogBlockedRcpts
EXSPI-14X-HubGetBlockedMailsCount
EXSPI-14X Check If Mailbox Circular Logging Disabled
EXSPI-14X Check If Public Folder Circular Logging Disabled
EXSPI-14X Check Mailbox Circular Logging Enabled
EXSPI-14X Check Outlook Anywhere Enabled
EXSPI-14X Check Outlook Anywhere Not Enabled
EXSPI-14X Check Public Folder Circular Logging Enabled
EXSPI-14X Check Tracking Log Settings
EXSPI-14X Dc-Get Top Destination Details
EXSPI-14X Dc-Get Top Recipient Details
EXSPI-14X Dc-Get Top Sender Details
EXSPI-14X Dc-Get Top Source Details
EXSPI-14X Dc-GetMailFlowLatency
EXSPI-14X Dc Replication Summary
EXSPI-14X Get Configuration of The Transport Agent
EXSPI-14X Get Exchange Availability
EXSPI-14X Get Mailbox Details
EXSPI-14X Get Mailbox IS Sum Data
EXSPI-14X Get Public Folder Details
EXSPI-14X Get Public IS Sum Data
EXSPI-14X Get Queue Data
EXSPI-14X Get UMHuntGroup Details

Table 2 Policies
EXSPI-14X Get UMMailbox Pin Details
EXSPI-14X Get UMServer Details
EXSPI-14X Get Unified Messaging Mailbox Details
EXSPI-14X GetUM IPGatewayDetails
EXSPI-14X Test Mapi Connectivity
Exchange 2010 Discovery

Modify the policies listed in the following table to run as user with the following privilege:

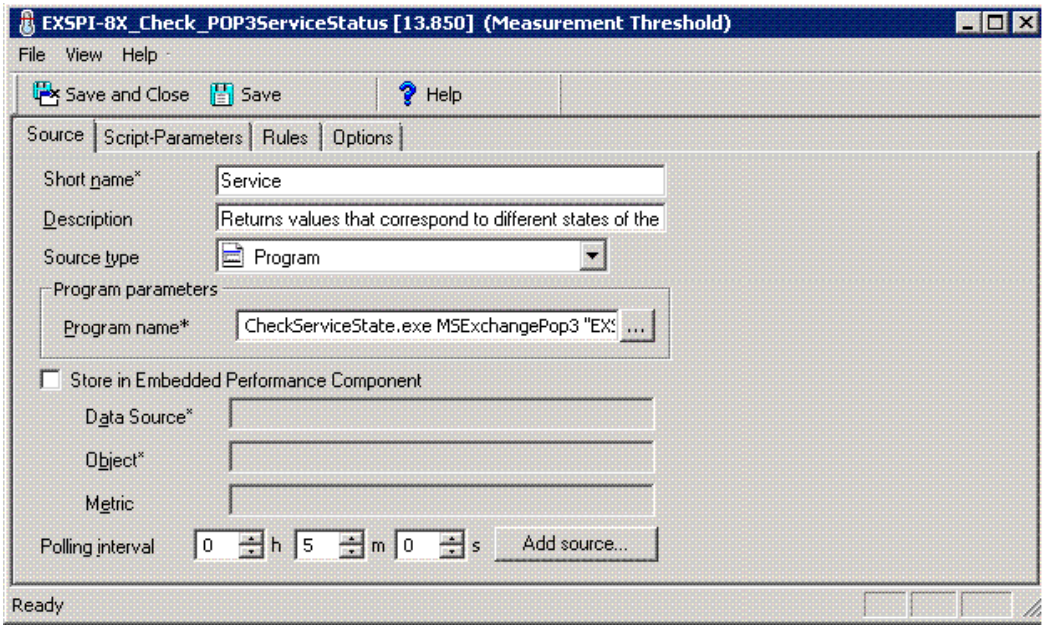
User Privilege: Local Administrator of Exchange Edge Server 2010

Table 3 Policies
EXSPI-14X-EdgeGetBlockedMailsCount
EXSPI-14X Edge Check Tracking Log Settings
EXSPI-14X Edge Get Configuration of The Transport Agent
EXSPI-14X Edge Get Queue Data
Exchange 2010 Discovery

Customizing policies

To customize Microsoft Exchange SPI polices, follow these steps:

1. Right-click the policy and select **All Tasks** → **Edit...**. The window to edit the policy opens.
2. Click the required tab to customize the attributes. Set the required thresholds and other options, if required.
3. Click **Save and Close**.



4 Redeploy the polices, if you have customized the polices after deploying them.

Use Smart Plug-ins Upgrade Tool Kit 2.03 to retain the customization of the earlier versions of the Microsoft Exchange SPI polices. See *HP Operations Smart Plug-in Upgrade Toolkit Windows User Guide* for more details.

Creating Data Sources

If you use HP Performance Agent as the datastore, data source creation and data logging happens in HP Performance Agent, by default. There is no configuration required.

To create data sources and to log data into CODA, while Performance Agent is installed, perform the following steps:

1 Create a folder `dsi2ddf` in the path `%OvAgentDir%\Conf`, if it does not exist.

2 Create an empty file `nocoda.opt`.

3 Enter the names of the other data sources *except EX2007_DATA* or *EXSPI_DATA*, which are to be created and for which the data logging has to happen in Performance Agent into the file `nocoda.opt`.

The data source *EX2007_DATA* or *EXSPI_DATA* is created and data logging happens in CODA.

For more details on the data store (CODA) metrics and policy logging details, see *HP Operations Smart Plug-in for Microsoft Exchange Server Online Help*.

Deploying Microsoft Exchange SPI policies on Managed Nodes

Configuration Deployment fails, if powershell prompt, with EXSPI pssnapin loaded, is kept open on managed node.

If the Microsoft Exchange server nodes run on a cluster environment, perform the steps as described in Editing Discovery Policy on page 30.

To deploy the Microsoft Exchange SPI polices on the managed nodes, perform the following steps:

1 In the console tree of the HPOM console, expand **Policy Management** → **Policy Groups** → **SPI for Exchange** → **en** → **Exchange 2007** or **Exchange 2010** → **Manual Deploy Groups**.

2 Right-click the <**Policy Group**>. Select **All Tasks** → **Deploy on...**. The Deploy polices on... Window appears listing all the managed nodes.

3 Select one or more Exchange managed nodes on which you want the <**Policy Group**> to be deployed.

4 Select the policy status after deployment as **Enable**.

5 Click **OK**. The <**Policy Group**> is deployed on the selected nodes which host the appropriate server role.

To verify the status of the policies after deployment, at the HPOM console, expand **Node**, right-click the node on which the policies are deployed, and select **View Policy → Inventory.**

Assign only those policy groups on the managed nodes which host the roles that the policy group is related to. For example, if the managed node hosts the Edge Server, deploy only the Edge Server policy group.

See the following table to deploy the specific policy group for the corresponding Microsoft Exchange Server Role.

Table 4 Server Role and Policy Group

Server Role	Policy Group
Mailbox Server	**Policy Management → Policy Groups → SPI for Exchange → en** (**ja**) **→ Exchange 2007** or **Exchange 2010 → Manual Deploy Groups → Mailbox Server**
Hub Transport Server	**Policy Management → Policy Groups → SPI for Exchange → en** (**ja**) **→ Exchange 2007** or **Exchange 2010 → Manual Deploy Groups → Hub Transport Server**
Edge Transport Server	**Policy Management → Policy Groups → SPI for Exchange → en** (**ja**) **→ Exchange 2007** or **Exchange 2010 → Manual Deploy Groups → Edge Server**
Client Access Server	**Policy Management → Policy Groups → SPI for Exchange → en** (**ja**) **→ Exchange 2007** or **Exchange 2010 → Manual Deploy Groups → Client Access Server**
Unified Messaging Server	**Policy Management → Policy Groups → SPI for Exchange → en** (**ja**) **→ Exchange 2007** or **Exchange 2010 → Manual Deploy Groups → Unified Messaging Server**

Deploy the following policy groups for *all* the managed nodes irrespective of the specific server role:

- Discovery

  Policy Management → Policy Groups → SPI for Exchange → en (**ja**) **→ Exchange 2007** or **Exchange 2010 → Manual Deploy Groups → Discovery**

- Availability

  Policy Management → Policy Groups → SPI for Exchange → en (**ja**) **→ Exchange 2007** or **Exchange 2010 → Manual Deploy Groups → Availability**

- Collector Definition

  Policy Management → Policy Groups → SPI for Exchange → en (**ja**) **→ Exchange 2007** or **Exchange 2010 → Manual Deploy Groups → Collector Definition**

Deploy the EXSPI-14X Error Messages policy on the Microsoft Exchange 2010 server so that error messages generated by the Microsoft Exchange SPI policies are sent to the Management Server.

- ExBPA Integration

  Policy Management → Policy Groups → SPI for Exchange → en (**ja**) **→ Exchange 2007** or **Exchange 2010 → Manual Deploy Groups → ExBPA Integration**

- For Microsoft Exchange Server 2010, before deploying policies on the Edge Server, modify the policies—Exchange 2010 Discovery and EXSPI-14X Get Exchange Availability, to run as user with the privilege—Local Administrator of the Edge Server.
- For Microsoft Exchange Server 2007, edit the Start PowerShell Collector tool to run as user with the Local Administrator of the Edge Server privilege.

Discovery Configuration Scenario

The Microsoft Exchange SPI discovers the services of the Microsoft Exchange 2007 Server and Microsoft Exchange 2010 Server. It helps you manage the Microsoft Exchange environment.

For non-clustered Exchange server nodes, create a copy of the Discovery policy before editing it. Perform the following steps to create a copy of the Discovery policy:

1. In the HPOM console, expand **Policy Management** → **Policy Groups** → **SPI for Exchange** → **en** → **Exchange 2007** or **Exchange 2010** → **Manual Deploy Groups** → **Discovery**.
2. Right-click **exchange 2007 discovery** or **Exchange 2010 Discovery** from the pane.
3. Select **All Tasks**, and then click **Edit...**. The edit window of the policy appears.
4. Click **File** → **Save As.**

   The Save As dialog box opens.
5. Edit the name of the policy as required and click **OK.**

   The new discovery policy is created.

Editing Discovery Policy

Perform the following steps only for the clustered Exchange server nodes.

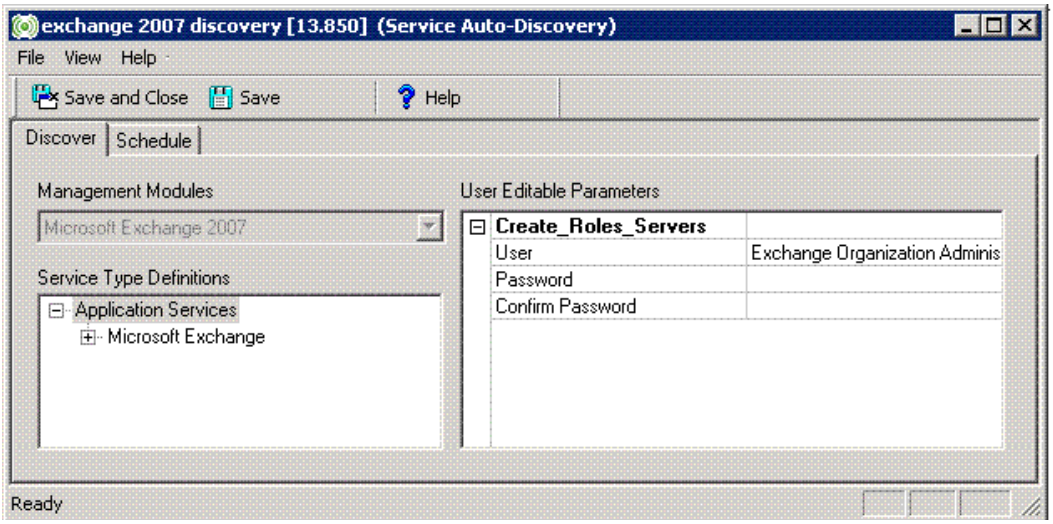
To edit the Microsoft Exchange SPI Discovery policy, follow these steps:

1. In the HPOM console, expand **Policy Management** → **Policy Groups** → **SPI for Exchange** → **en** → **Exchange 2007** or **Exchange 2010**→ **Manual Deploy Groups** → **Discovery**.
2. Right-click **exchange 2007 discovery** or **Exchange 2010 Discovery** from the pane.
3. Select **All Tasks**, and then click **Edit...**. The edit window of the policy appears.
4. Select the Discover tab and type the credentials of an Exchange Organization Administrator.

   The format of the credentials must be as follows:

   — User: <domain\\username>

   — Password: <password>

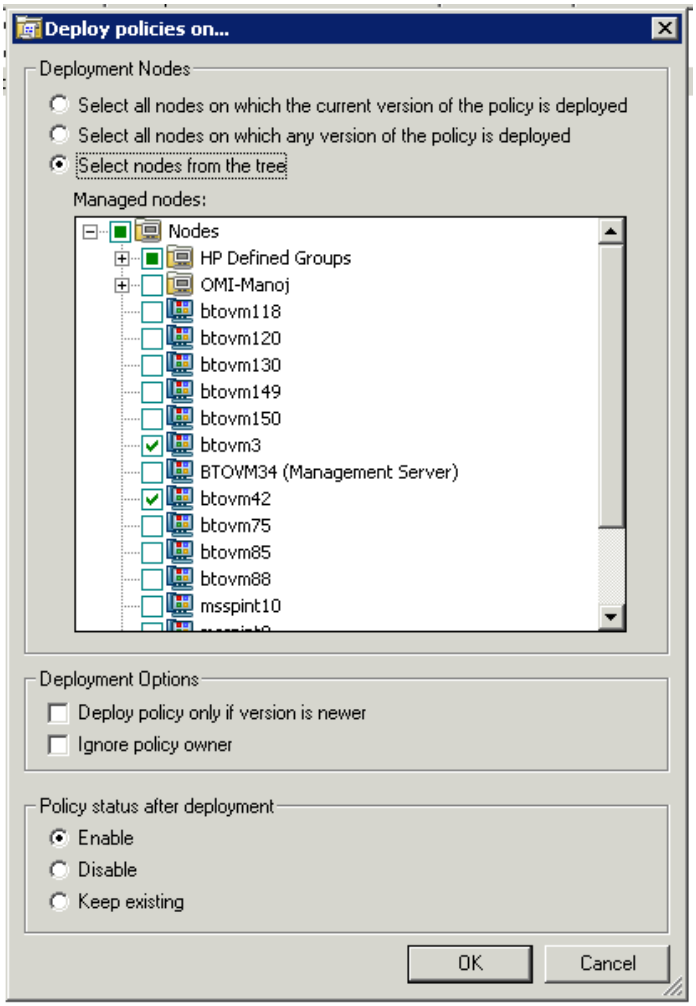


5. Click **Save and Close**.

Deploying Discovery Policy to Managed Nodes

Deploy the Discovery policy on the Microsoft Exchange nodes. To deploy the Discovery policy, follow these steps:

1. In the HPOM console, expand **Policy Management** → **Policy Groups** → **SPI for Exchange** → **en** → **Exchange 2007** or **Exchange 2010**→ **Manual Deploy Groups** → **Discovery.**
2. Right-click **exchange 2007 discovery** or **Exchange 2010 Discovery** from the pane.
3. Select **All Tasks** → **Deploy on...**. The Deploy policies on... dialog box appears showing all the managed nodes.
4. Select the **Policy status after deployment** as **Enable**.
5. Select the Microsoft Exchange nodes where you want to deploy the discovery policy and then click **OK**.



Viewing Service Map

You can view the newly discovered services of the Microsoft Exchange server, using the service map, after deploying the Discovery policy. For more information about viewing the service map, see Viewing Service Map on page 11.

Additional Configuration Procedure

You can enhance the monitoring capabilities of the Microsoft Exchange SPI on the Microsoft Exchange Server 2007 or Microsoft Exchange Server 2010 nodes by customizing the data collection configuration. The Microsoft Exchange SPI data collectors follow a pre-defined data collection configuration to monitor the managed nodes.

Use the pre-defined data collection configuration to monitor the managed nodes. You can add new configuration to the default configuration for the Microsoft Exchange SPI data collector to use. You can create and modify those new data collection configuration.

EXSPI Data Collectors

The pre-defined data collection configuration is described in an XML file named as `spimetadata.xml`. Deploy the **EXSPI-8X SPIMetaData Versioning** policy of Collector Definition policy group to use the `spimedata.xml` file. The EXSPI data collectors follow the data collection configuration as defined in the `spimetadata.xml` file. This file consists of a component—collection, which determines the data which is to be collected by an EXSPI data collector. The data collection configuration describes the complete workflow of collecting, storing, and alerting.

The EXSPI Data collector can collect only the data from Cmdlets available on the managed node.

A data collection configuration consists of the following components or building blocks:

- *MetricSet*—A metric is a measurement that defines a specific operational or performance characteristic of a system or an application. A MetricSet is a group of related metrics.
- *OpCMsg Calls* —An OpCMsg Call generates an alert message when a metric value does not match a pre-set value or range of values.
- *OpCMon Calls*— An OpCMon Call sends the collected data to a measurement threshold policy. The measurement threshold policy checks the data against some upper or lower threshold as defined within the policy and sends alarm to the message browser.
- *Data Store*—A Data Store defines the way in which the collected data can be stored into the data store (CODA or HP Performance Agent).

Each data collection configuration is associated with a scheduled task policy. Each collection is associated with a unique integer value called the collection ID. A request must be sent to the EXSPI Data Collector with the ID as one of the parameters to start the collection process. This is performed by the schedule task policy for each collection which executes a command **`HP.OV.SPI.ExScheduler -CID <ID>`**.

When you deploy a scheduled task policy on a managed node, the EXSPI data collector retrieves the following details from the data collection configuration:

- The cmdlets to be executed and the metrics to be collected from the Resultset.
- The name of the data store where the collected data is to be logged.
- The name of the monitor policy to which a particular metric has to be passed. This policy performs the threshold on this metric value.
- The set of rules in the `spimetadata.xml` file to be applied on the metrics and if required generate opcmsg.

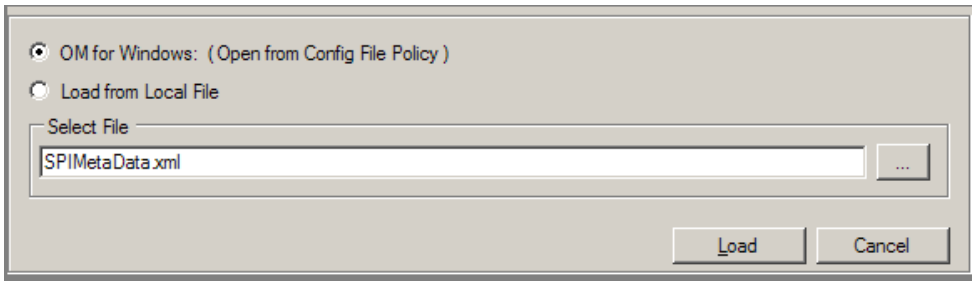
EXSPI Configuration Utility Tool

The Microsoft Exchange SPI provides a tool named EXSPI Configuration Utility to modify the default data collection configuration specified in the `spimetadata.xml` file on the Microsoft Exchange Server 2007 or Microsoft Exchange Server 2010 nodes be adding new data collection through its graphical user interface. You can add the components of the data collection configuration—MetricSet, OpCMsg Calls, OpCMon Calls, and data store—and modify the newly created collection configuration to monitor the managed nodes.

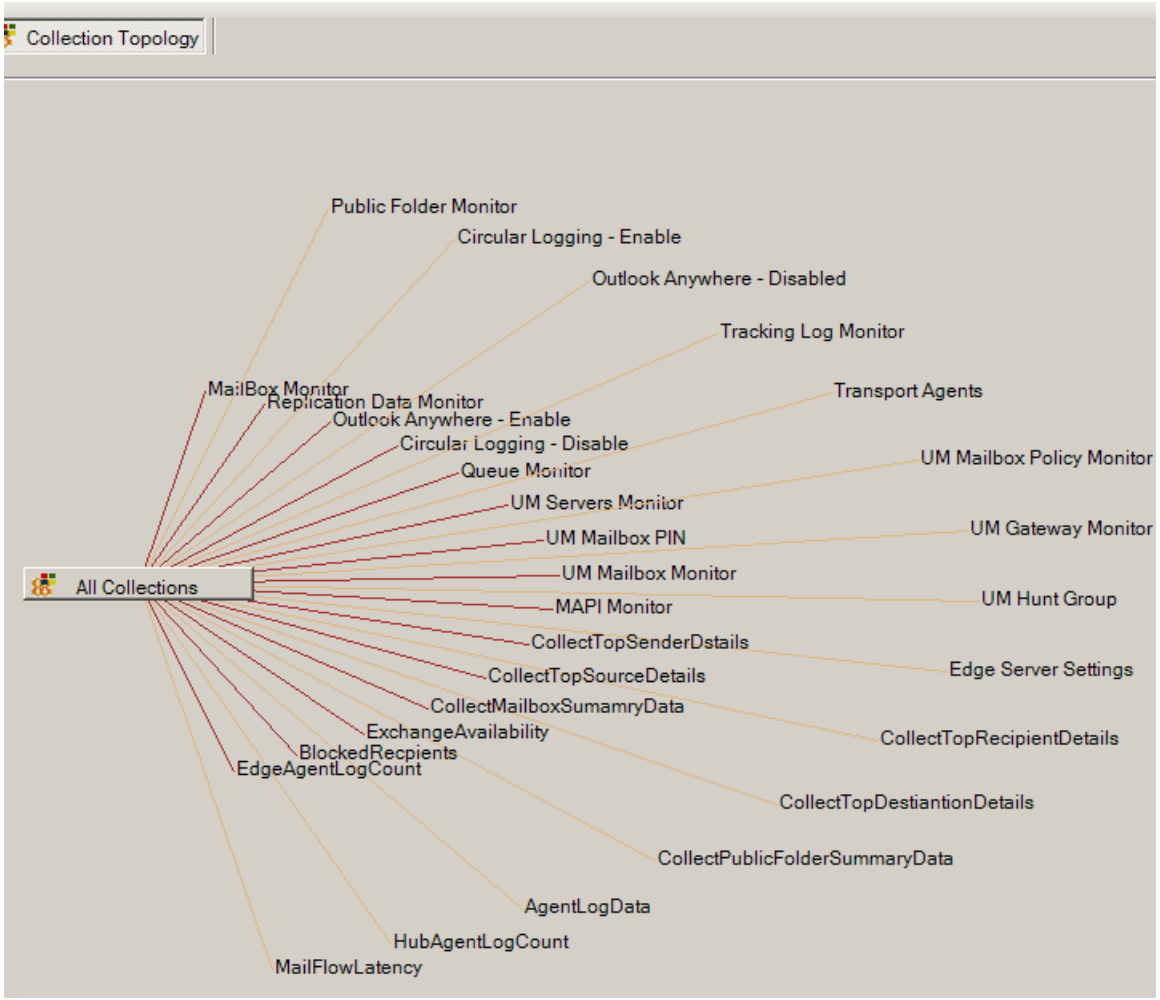
Using EXSPI Configuration Utility

To start the EXSPI Configuration Utility tool, perform the following steps:

1. In the console tree, expand **Tools** → **SPI for Exchange**, and select **Exchange 2007** or **Exchange 2010**.
2. In the details pane, double-click **EXSPI Configuration Utility**. The **Select Server** dialog box opens.
3. Select **OM for Windows Server**, and click **Load**.



4 The EXSPI Configuration Utility tool starts displaying the collection topology.



Open from Config File Policy option cannot be used on an HPOM for Windows - Remote Console. Edit the configuration from local SPIMetaData.xml, update the policy EXSPI-8X SPIMetadata Versioning and re-deploy to managed nodes.

Viewing EXSPI Configuration Utility

The EXSPI Configuration Utility provides you with a graphical user interface to perform necessary tasks to create new data collection configuration. The graphical user interface consists of the following:

- Menu bar
- Toolbar
- Left pane and right pane

EXSPI Configuration Utility Menu bar

You can use the menu options in the menu bar to perform tasks like adding and removing an element of collection definition. You can also view a preview of every element (in the form of XML markups) by using the Preview menu option.

Table 5 EXSPI Configuration Utility Menu bar

Menu	Options	Description
File	Save	Saves any changes that you make.
	Save as	Enables you to save the updated `spimetadata.xml` file on a different location and with a different name.
	Reload/ Cancel All Changes	Reloads the utility, cancels all unsaved changes.
	Exit	Exits the PowerShell collection configuration utility.
Edit	Delete Selected Collection	Deletes the selected collection configuration or component from this menu.
Insert	Add New MetricSet	Adds a new MetricSet to the list of available MetricSets.
	Add New Metric	Adds a new Metric to the list of available metrics in a particular MetricSet. Option is enabled only when you select a MetricSet.
	Add New Collection	Adds a new collection to the list of available collections.
	Add New DataStore	Adds a new DataStore to the list of available DataStores.
	Add New OpCMon Call	Adds a new OpCMon Call to the list of available OpCMon Calls.
	Add New OpCMsg Call	Adds a new OpCMsg Call to the list of available OpCMsg Calls.

EXSPI Configuration Utility Toolbar

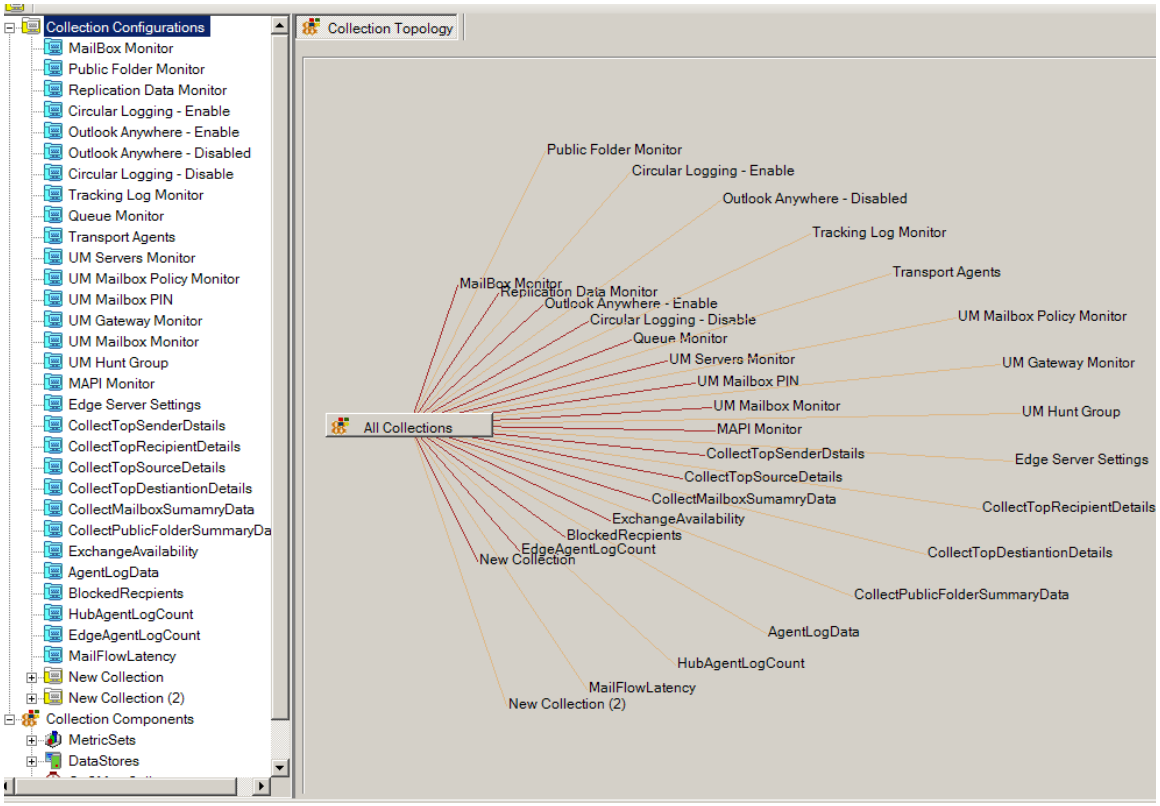
You can use the toolbar to add references to the collection elements—MetricSets, DataStores, OpCMsg Calls, and OpCMon Calls.

Table 6 EXSPI Configuration Utility Toolbar

Icon	Tool Name
	Add MetricSet
	Add DataStore
	Add OpCMsg Call
	Add OpCMon Call

EXSPI Collection Configuration Utility Panes

The left pane lists all available metrics, MetricSets, collections, DataStores, OpCMsg Calls, and OpCMon Calls in a tree like structure. You can navigate to specific collection elements with the help of the left pane. The right pane provides you an interface to view and modify properties and settings for every collection element.



If you modify the EXSPI Configuration Utility tool, ensure to deploy the EXSPI-8X SPIMetaData Versioning or EXSPI-14X SPIMetaData Versioning policy on the managed nodes where the changed data collection mechanism takes effect. Even if you revert to the previous version of the EXSPI-8X SPIMetaData Versioning or EXSPI-14X SPIMetaData Versioning policy, the interface shows the latest version.

Saving Collection Configuration

There are two options for saving the updated collection configuration:

- **File → Save**
- **File → Save As**

File and Save Option

When you open the file from the following location:

- From **OM for Windows** option: The configuration is read from the EXSPI-8X SPIMetadata Versioning or EXSPI-14X SPIMetaData Versioning policy. When you save the updated configuration, the data is written back to the policy. This updates the version of the policy.

  To make this configuration available on the node, redeploy the policy.

Every time you save the file, a new version is created. So avoid saving the file very often to limit the numerous versions of the file.

- From the local disk: No versions are maintained if you save the file from local disk as the latest file overwrites the previous file.

File and Save As Option

When you click **File** → **Save As**, the file is saved irrespective of its location in the local disk. The **Save As** option, however, enables you to save only the local copy.

Adding Collection Data

The EXSPI Configuration utility tool enables you to add the following components:

- MetricSet
- OpCMsg Call
- OpCMon Call
- DataStore
- Collection

Do not modify any default MetricSet or data store or both. You can however modify the newly added MetricSet, the DataStore, OpcMSg Call, and OpcMon Call.

Adding a MetricSet

A MetricSet is a group of related metrics. The Microsoft Exchange SPI collects these metrics to monitor the health, availability, and performance of Microsoft Exchange Server 2007.

Each MetricSet can execute a Powershell command. The Powershell command can either be a single Cmdlet or a pipeline of Cmdlets. You can use either or all of the following Cmdlets:

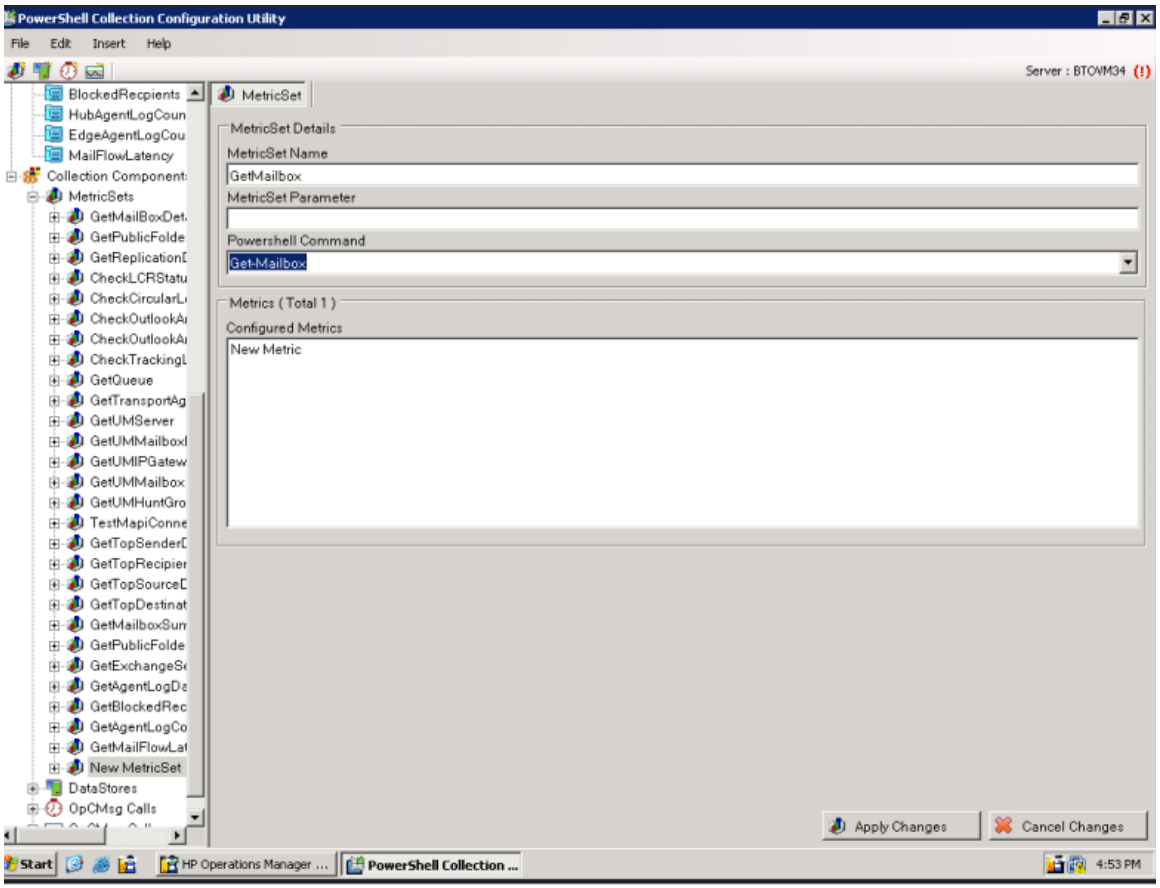
- Default Powershell Cmdlets
- Microsoft Exchange Cmdlets
- EXSPI Internal Cmdlets
- User created cmdlets (See Using Additional Cmdlets)

To add a new MetricSet, follow these steps:

1. In the left pane, right-click **MetricSet** from **Collection Components**, and then click **Add New MetricSet** or click **Insert** → **Add New MetricSet** from the menu bar. A new MetricSet (with the name **New MetricSet**) appears in the list of MetricSets.
2. In the right pane, specify the MetricSet Name. For example **`GetMailBox`**. Select the PowerShell command from the drop down.

   The list consists of the default Cmdlets available with the Microsoft Exchange Management PowerShell.

You can use the drop-down option for PowerShell commands *only* for a single command. For more than one PowerShell command (pipelined commands), you must manually type the required commands.



3 Click **Apply Changes**.

4 Click **File** → **Save**. The added MetricSet (**`GetMailBox`**) gets listed with the other MetricSets in the left pane.

For the MetricSet GetMailBoxDetails (which is required to collect Mailbox Details), the cmdlet can be Get-Mailbox or if we want to add filter and not want to log System Mailbox Details, it can be "Get-Mailbox | where {$_.DisplayName -notlike "SystemMailbox*" }".

After you add a new MetricSet, the EXSPI Configuration Utility adds a new metric template to the MetricSet. You can create new metrics and add these to the newly created MetricSet.

Adding a Metric

After you add a MetricSet, you must now add or select metrics from the resultset of the powershell command specified in the MetricSet. If the command is a single Cmdlet, select the metrics from the drop-down list. If the command is pipelined command (more than one cmdlet) type these commands. Then type each metric name from the resultset of the last Cmdlet in the pipeline.

To add a new metric:

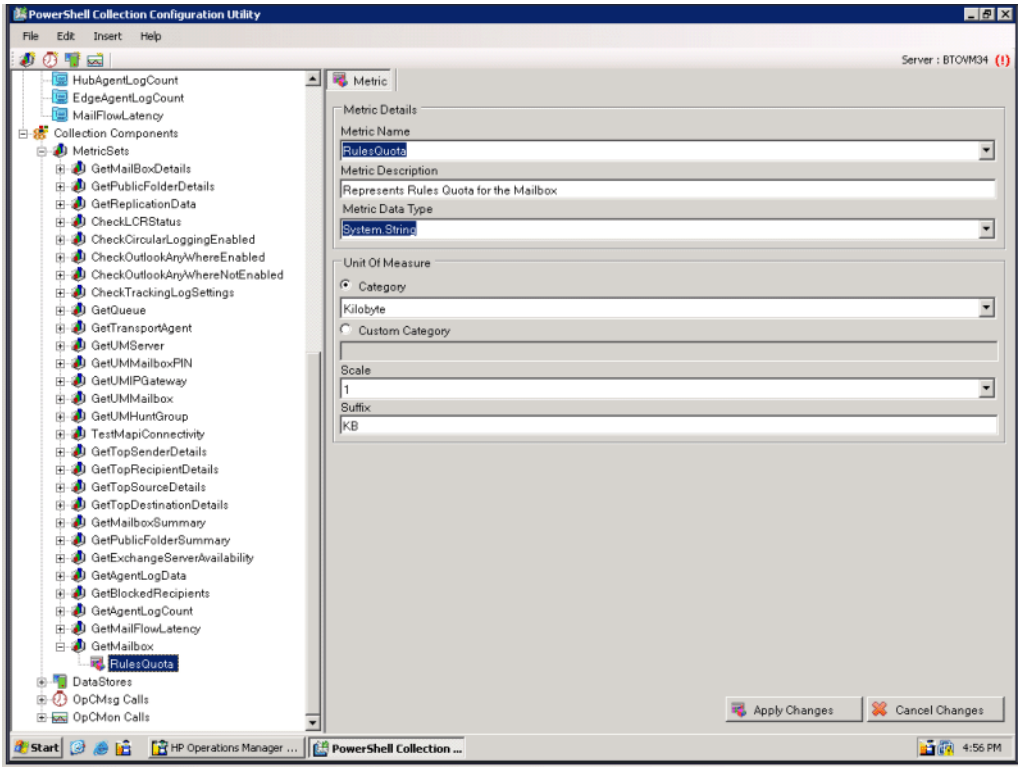
1 In the left pane, expand **MetricSets** from **Collection Components**.

2 Right-click the MetricSet (for example **GetMailbox**), and then click **Add New Metric** or click **Insert** → **Add New Metric** from the menu bar.

3 A new metric (with the name New Metric) appears in the list of metrics under the selected MetricSet enabling you to fill the following options (as shown in the table) on the right pane.

Option	Description
Metric Name	Select a metric name from the drop-down list of the available metrics or type the required metric name if it is not listed in the drop-down list. For example, **NextHopDomain**.
Metric Description	Type the description of the metric, RulesQuota (Example).
Metric Data Type	After you choose the metric, suitable data type appears by default. Do *not* change the default setting (RulesQuota). However, if you have typed the metric, then you must type the required metric data type also.
Category	Only incase of metrics which represents bytes/kilobytes you must mention a Category. For Example for the metricset GetMailbox the metric `RulesQuota` returns value in Kilo Bytes (KB). So the category to be selected is KiloByte.
Scale	To convert the metric value to a unit of your choice, specify the multiplying factor. For example, if the metric value is in the form of KB and you want to collect the metric in the form of bytes, specify **16** (example) in this field. This option is useful for the metrics which are representing the value in Bytes or KB and so on.
Suffix	Specify the element of the metric value that you want to eliminate. For example, if the metric value is appended with the unit B (as in 1200B), you can eliminate B by typing B in the Suffix text box. This option is useful for those metrics which identifies memory size in bytes. Many of the Microsoft Exchange cmdlet metrics which return BYTES/KILOBTYES are suffixed with B/KB. As in the example of `RulesQuota` it is KB. To use the metrics for calculations we must remove the suffix. By mentioning the suffix here the collector removes the suffix from the metric before using it. Specify one suffix for each metric.

4 Click **Apply Changes** to save the metric. The added metric RulesQuota is listed in the MetricSet GetMailbox.



5 Continue adding the other metrics, if required.

Adding an OpCMsg Call

If some metric values cross a certain threshold value, you can receive alert messages in the HPOM message browser. The EXSPI Data Collector Configuration enables you to specify the conditions on the metrics of a given metricset to generate alerts through the opcmsg call.

An OpCMsg Call is an element of a collection definition, which holds the following information:

- Threshold value (or range of values) for a metric.
- Alert message if the metric does not match the required value or crosses the range of values.
- Severity level (major, minor, normal, warning, and so on) of the event when the metric does not match the limiting value.

You can apply the rules over the metrics for an alert only for a *single* MetricSet.

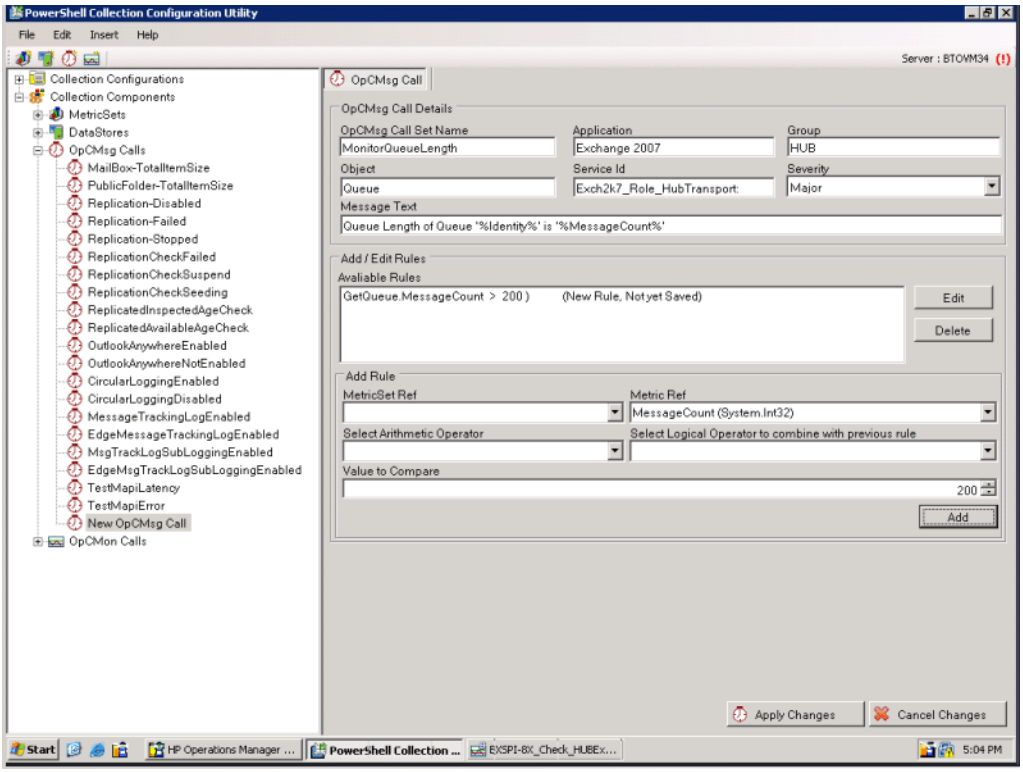
To add a new OpCMsg Call, follow these steps:

1 In the left pane, right-click **OpCMsg Calls** from **Collection Components**, and then click **Add New OpCMsg Call** or click **Insert** → **Add New OpCMsg Call** from the menu bar. A new OpCMsg Call appears in the list in the left pane.

2 Fill the following options (as shown in the table) appearing in the right pane.

Option	Description
OpCMsg Call Set Name	Type an appropriate name.
Application	Type an appropriate name of the application that will be affected. You can view this text in the HPOM message browser by opening the Message Properties dialog box. You can leave this field blank.
Object	Type an appropriate name of the object of the application that will be affected. You can view this text in the HPOM message browser by opening the Message Properties dialog box. You can leave this field blank.
Severity	Select the severity level of the event.
Message Text	Type the message that you want to generate.
MetricSet Ref	Select an available MetricSet from the list.
Metric Ref	Select an available metric from the list.
Select Arithmetic Operator	Select an available arithmetic operation from the list.
Select Logical Operator to combine with Previous Rule	This field is enabled only when you choose more than one limiting value or condition for the chosen metrics. Select AND or OR to combine the rules that you create based on the available arithmetic operators.
Value to compare	Select the limiting (threshold) value of the selected metric.

3 Click **Add** to add the rules.



4 Click **Apply Changes** to save the OpCMsg Call. The added OpCMsg Call GetQueue is listed with the other OpCMsg Calls.

Adding an OpCMon Call

An OpCMon Call sets a limiting value for metric data through a measurement threshold policy. The Microsoft Exchange SPI retrieves the details like message text and severity from the measurement threshold policy.

You can use OpCMon Calls only for numeric metric values.

To add a new OpCMon Call:

1 In the left pane, right-click **OpCMon Calls** from **Collection Components**, and the click **Add New OpCMon Call** or click **Insert** → **Add New OpCMon Call** from the menu bar. A new OpCMon Call appears in the list in the left pane.

2 Fill the following options (as shown in the table) appearing in the right pane.

Option	Description
Name	Type an appropriate name for the OpCMon Call.
MetricSet Ref	Select an available MetricSet.
Metric Ref	Select the metric name for which you want to set the OpCMon Call.
Measurement Threshold Policy Name	Type the name of a measurement threshold policy to which you want to associate this OpCMon Call.

3 Click **Apply Changes** to save the OpCMon Call. The added OpCMon Call TransportQueueCount is listed with the other OpCMon Calls.

Adding a DataStore

Data Stores define the way in which you can store metric data. After the Microsoft Exchange SPI collects metric data by using collectors, you can store the collected data either in the HP Operations agent's data store (CODA) or HP Performance Agent (if it is installed in the HPOM environment).

To add a new DataStore:

1 In the left pane, right-click **DataStores** from **Collection Components**, and the click **Add New DataStore** or click **Insert** → **Add New DataStore** from the menu bar. A new DataStore appears in the list in the left pane.

2 Fill the following options (as shown in the table) appearing in the right pane.

Option	Description
Name	Type an appropriate name for the DataStore.
Capacity	Type the number of rows for the DataStore.
Data Source	Type EX2007_DATA or EXSPI_DATA.
Data Table	Type EX2007_<table name> or EX2010_<table name>, where <table name> is an appropriate name for the table.
Index By	Set the index on daily, weekly, or monthly schedules.
Roll By	Type the interval at which the data should be flushed out of the data store. You can specify DAY, WEEK, or MONTH. You cannot store data for more than a month.

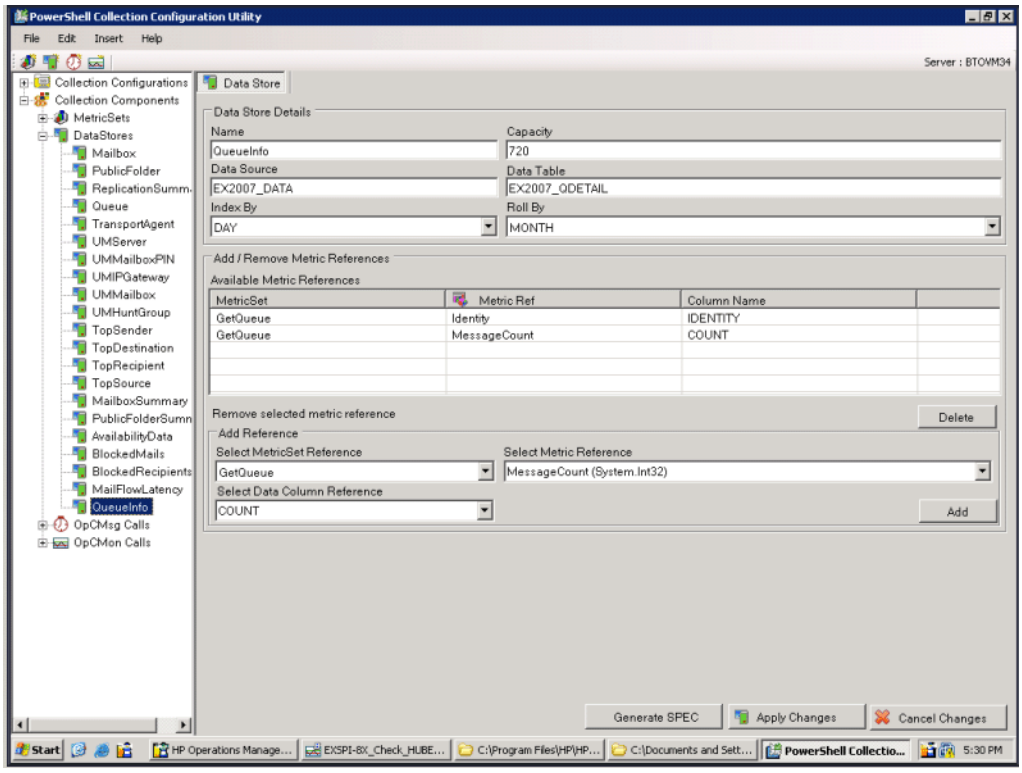
3 From the Select MetricSet reference drop-down list, select the appropriate **MetricSet**.

4 From the Select Metric reference drop-down list, select the one or more appropriate metrics.

5 In the Select Data column reference box, type a name for the data column in which the DataStore will store the selected metrics. Do not leave this field blank if you want to add more than one metric.

6 Click **Add**. You can add only one MetricSet whereas more than one metrics can be added but all the metrics should belong to the same MetricSet.

7 Click **Apply Changes** to save the DataStore. The added DataStore QueueInfo is listed with the other DataStores.



After you create a new Data Store, you must add it to an existing collection configuration. See Adding a Collection Configuration to add a collection configuration. After adding the newly created Data Store to an existing collection configuration, perform the following steps:

1 Go to the newly created DataStore.

2 In the right pane, click **Generate SPEC**. The Spec File Generator dialog box opens.

3 In the Spec File Generator dialog box, type an appropriate label name in the Table Label text box, and then click **Create**. The details of the SPEC file appear in the Preview of the SPEC File section.

4 Click **Save**. A pop-up box opens to confirm the successful creation of the spec file.

5 Close the Spec File Generator dialog box.

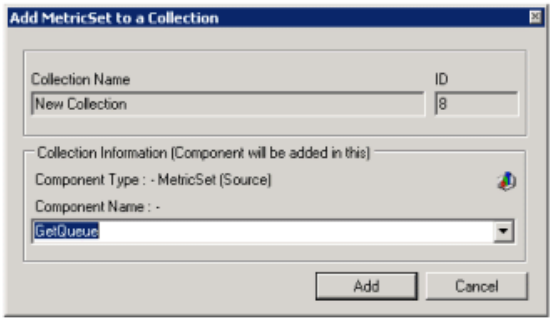
If you create a new DataStore and generate a spec file by using the PowerShell collection configuration utility, ensure that the spec file is made available at the instrumentation directory of the managed node. This can be done by saving the spec file in `Instrumentation Category` folder of the Microsoft Exchange SPI. Save the spec file in `%ovsharedir%\Instrumentation\Categories\Exchange2k7_Core` or `Exchange2k10_Core` on the HPOM Server. Then deploy the Exchange2k7_Core or Exchange2k10_Core category on the node. After this launch the Create Data Source tool on that node to add the datastore. Launch the Create Data Source tool on the nodes before you deploy the EXSPI-8X SPIMetaData Versioning or EXSPI-14X SPIMetaData Versioning policy.

Adding a Collection Configuration

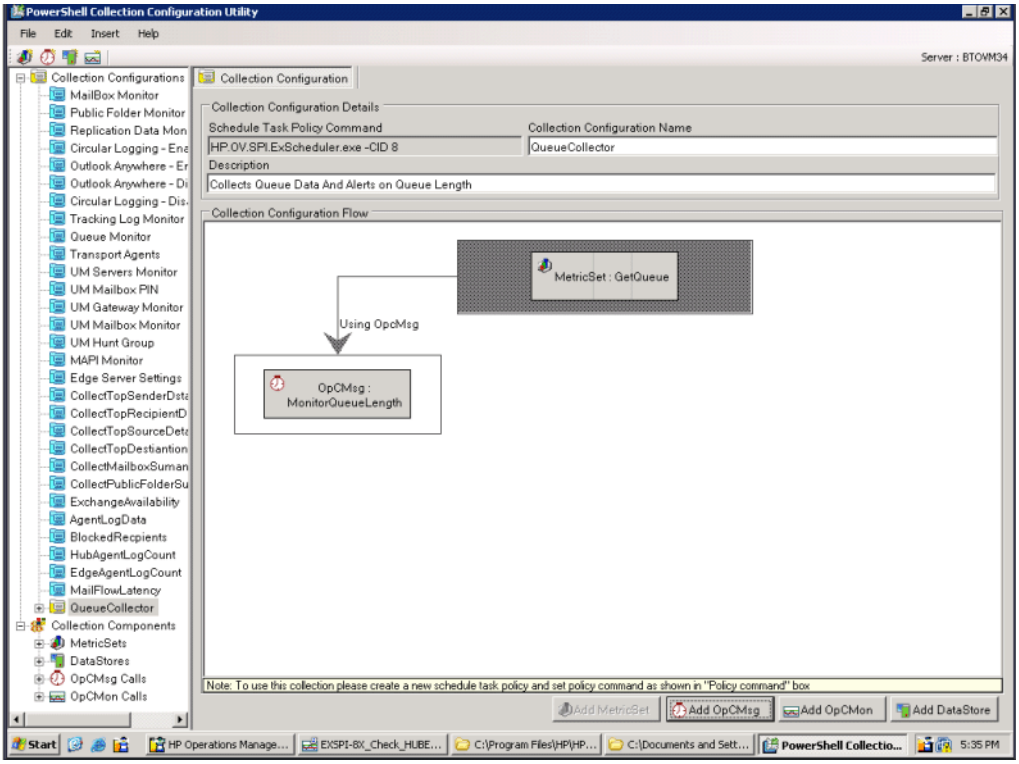
A collection defines the complete mechanism of metric data collection. A collector can collect metric data, log it to a data store, or send a message to the HPOM message browser if a threshold is violated. A collection configuration consists of all the elements that collectively describe the complete lifecycle of the collection mechanism for a MetricSet.

To add a new collection configuration:

1. In the left pane, right-click **Collection Configurations**, and select **Add New Collection** or select **Insert** → **Add New Collection**. A window appears to add MetricSet to the new collection.
2. Select the MetricSet from the Component Name box from the drop-down menu list.

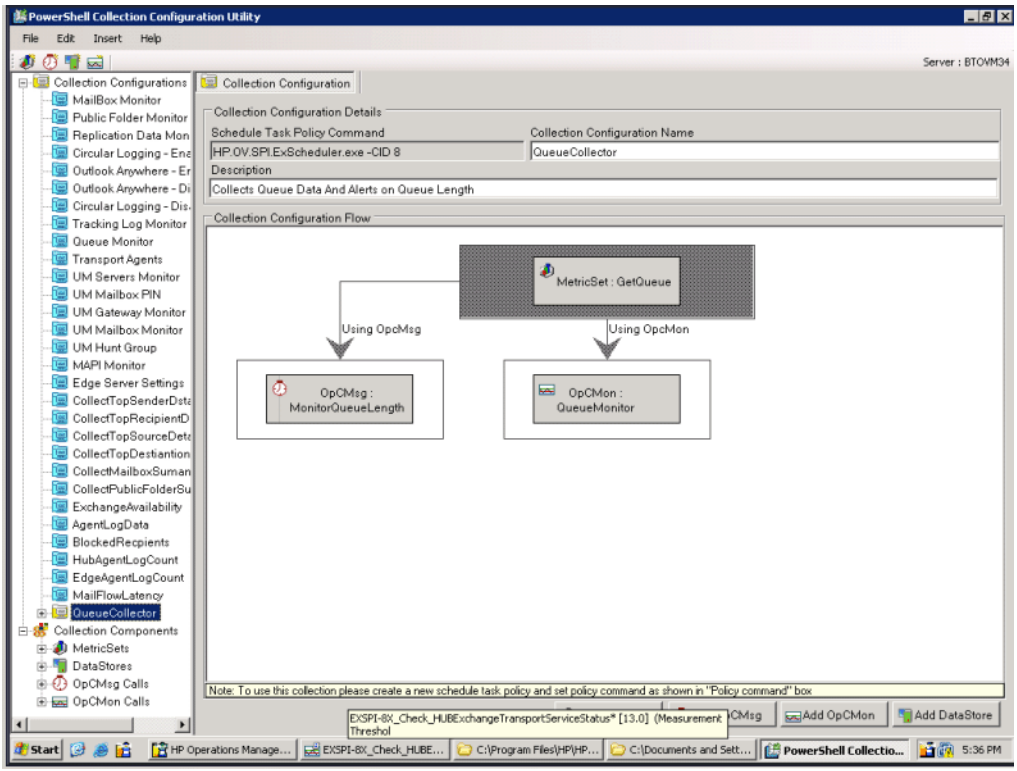


3. Click **Add** to add the MetricSet to the new collection.
4. To add an OpCMsg Call to this collection, click **Add OpCMsg** in the right pane. A window appears to add the OpCMsg Call to the new collection.
5. Select an OpCMsg Call from the Component Name box from the drop-down list, and then click **Add**. The OpCMsg Call is added to the collection.



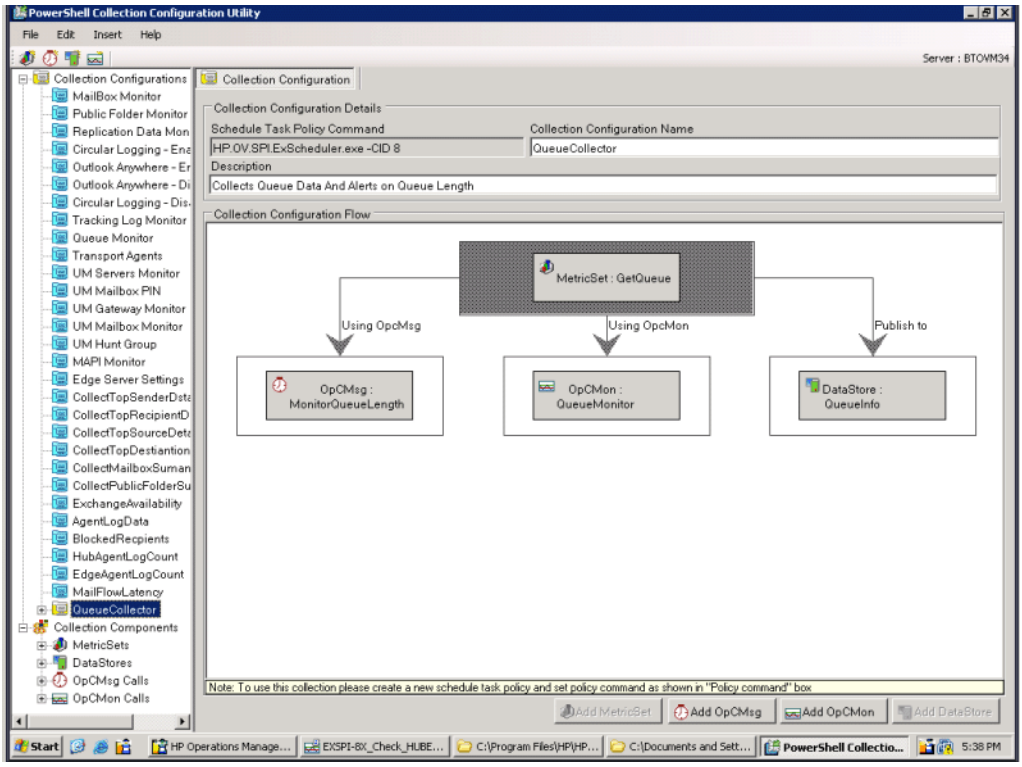
6 To add an OpCMon Call to this collection, click **Add OpCMon** in the right pane. A window appears to add the OpCMon Call to the new collection.

7 Select an OpCMon Call from the Component Name box from the drop-down list, and then click **Add**. The OpCMon Call is added to the collection.



8 To add a DataStore, click **Add DataStore** in the right pane. A window appears to add the DataStore to the new collection.

9 Select the appropriate DataStore from the Component Name box from the drop-down list, and then click **Add**. The DataStore is added to the collection.



10 In the right pane, type an appropriate name in the Collection Configuration Name text box.

11 Click **File** → **Save**. The new collection configuration is listed with the default configurations .

12 Note the command displayed in the Schedule Task Policy Command text box.

13 After you add a new collection configuration, you must perform the following tasks:

a Create a new scheduled task policy.

b In the newly created scheduled task policy, specify the command that you have noted down.

You must deploy the newly created scheduled task policy (along with the EXSPI-8X SPIMetaData Versioning or EXSPI-14X SPIMetaData Versioning policy) on the nodes where you want the changed data collection mechanism to take effect.

Modifying a Collection

The EXSPI Configuration utility tool enables you to modify the newly added configuration collections:

- MetricSet
- OpCMsg Call
- OpCMon Call

- DataStore
- Collection configuration

Do not modify any default MetricSet or data store.

Modifying a MetricSet

To modify the MetricSet, perform the following:

1. Click the MetricSet (for example, GetQueue) which requires changes. The MetricSet details are displayed in the right pane.
2. Change one or more of the following options (as shown in the table) appearing in the right pane.

Option	Description
MetricSet Name	Change to an appropriate name.
Powershell Command	Select a command from the list of available commands.

3. Click **Apply Changes** to save the change.

If you change the PowerShell command, all the previously added metrics will be removed.

Do not delete any default MetricSet that is present in the EXSPI Configuration Utility. To delete a MetricSet that you have added to the EXSPI Configuration Utility, right-click the MetricSet in the left pane, and then click **Delete Selected MetricSet**.

Modifying a Metric

To modify an existing metric:

Do not modify the metric order in the existing default MetricSets. You can modify the order of metrics only in the MetricSets that you have added to the EXSPI Configuration Utility.

1. In the left pane, click the metric that you want to modify.
2. Change one or more of the following options (as shown in the table) appearing in the right pane.

Option	Description
Metric Name	Select a metric name from the list of available metrics.
Metric Description	Type a description of the metric.
Metric Data Type	After you choose the metric, suitable data type appears by default. Do not change the default setting.

Option	Description
Category	Select this option to specify the unit of measure of the metric.
Scale	To convert the metric value to a unit of your choice, specify the multiplying factor. For example, if the metric value is in the form of KB and you want to collect the metric in the form of bytes, specify 1024 in this field.
Suffix	Specify the element of the metric value that you want to eliminate. For example, if the metric value is appended with the unit B (as in 1200B), you can eliminate B by typing B in the Suffix text box.

3 Click **Apply Changes**.

Do not delete any default metric that is present in the EXSPI Configuration Utility. To delete a metric that you have added to the EXSPI Configuration Utility, right-click the metric in the left pane, and then click **Remove this...**.

4 Click **Apply Changes**.

5 Click **File** → **Save**.

Modifying OpCMsg Call

To modify an existing OpCMsg Call:

1 In the left pane, expand **Collection Components**, and then click the OpCMsg Call that you want to modify.

2 Change one or more of the following options (shown in the table) appearing in the right pane.

Option	Description
OpCMsg Call Set Name	Type an appropriate name.
Application	If necessary, modify the name of the application that will be affected. You can view this text in the HPOM message browser when you open the Message Properties dialog box. You can leave this field blank.
Object	If necessary, modify the name of the object of the application that will be affected. You can view this text in the HPOM message browser when you open the Message Properties dialog box. You can leave this field blank.
Severity	Select the severity level of the event.
Message Text	Type the message that you want to generate.
MetricSet Ref	Select an available MetricSet from the list.
Metric Ref	Select an available metric from the list.

Option	Description
Select Arithmetic Operator	Select an available arithmetic operation from the list.
Select Logical Operator to combine with Previous Rule	This field is enabled only when you choose more than one limiting value or condition for the chosen metrics. Select AND or OR to combine the rules that you create based on the available arithmetic operators.
Value to compare	Select the limiting (threshold) value of the selected metric.

3 Click **Apply Changes**.

To delete an existing OpCMsg Call, right-click the OpCMsg Call in the left pane, and then click **Remove from Collection**.

Editing Existing Rules

You can edit the existing rules of OpCMsgCall. To edit the rules, perform the following:

1 Click **Edit**.

2 In the section Update Rule, change one or more of the following options:

- Metric Ref
- Arithmetic Operator

To delete any existing rule, select the rule in the Available Rules box, and then click **Delete**.

Modifying OpCMon Call

To modify an existing OpCMon Call:

1 In the left pane, click the OpCMon Call that you want to modify.

2 Change one or more of the following options (as shown in the table) appearing in the right pane.

Option	Description
Name	Type an appropriate name for the OpCMon Call.
Metric Ref	Select the metric name for which you want to set the OpCMon Call.

3 In the Measurement Threshold Policy name text box, type the name of a measurement threshold policy to which you want to associate this OpCMon Call.

4 Click **Apply Changes**.

5 To delete an existing OpCMon Call, right-click the **OpCMon Call** in the left pane, and then click **Remove from Collection**.

Modifying a Data Store

To modify an existing DataStore:

1 In the left pane, click the DataStore that you want to modify.

2 Change one or more of the following options (as shown in the table) appearing in the right pane.

Option	Description
Name	Name for the DataStore.
Capacity	Number of rows for the DataStore.
Data Source	Type EX2007_DATA or EXSPI_DATA.
Data Table	Type EX2007_<table name> or EX2010_<table name>, where <table name> is an appropriate name for the table.
Index By	Type DAY.
Roll By	Interval at which data must be flushed out of the data store. You can specify DAY, WEEK, or MONTH. You cannot store data for more than a month.

3 From the **Select MetricSet Reference** drop-down list, select a MetricSet.

4 From the **Select Metric Reference** drop-down list, select a metric.

5 In the **Select Data Column Reference** box, type a name for the data column in which the DataStore will store the metric selected.

Do *not* leave this field blank if you want to add more than one metric.

6 Click **Add**. You cannot add more than one MetricSet. You can however add more metrics in that MetricSet.

7 To add a new MetricSet and a new metric to this DataStore, in the Add Reference section, select new MetricSet and metric, and then click **Add**.

8 To delete existing MetricSets and metrics from this DataStore, select an entry from the Available Metric References list, and then click **Delete**.

9 Click **Apply Changes**.

Regenerating the Spec File

After you modify an existing DataStore, you must re-generate the spec file. To re-generate the spec file for the modified DataStore, perform the following steps:

1 Go to the modified DataStore.

2 In the right pane, click **Generate SPEC**. The Spec File Generator dialog box opens.

3 In the Spec File Generator dialog box, type an appropriate label name in the Table Label text box, and then click **Create**. The details of the SPEC file appear in the Preview of the SPEC File section.

4 Click **Save**. A pop-up box opens to confirm the successful creation of the spec file.

5 Close the Spec File Generator dialog box..

If you create a new DataStore and generate a spec file by using the PowerShell collection configuration utility, ensure that the spec file is made available at the instrumentation directory of the managed node. This can be done by saving the spec file in `Instrumentation Category` folder of the Microsoft Exchange SPI. Save the spec file in `%ovsharedir%\Instrumentation\Categories\Exchange2k7_Core` or `Exchange2k10_Core` on the HPOM Server. Then deploy the Exchange2k7_Core or Exchange2k10_Core category on the node. After this launch the Create Data Source tool on that node to add the datastore. Launch the Create Data Source tool on the nodes before you deploy the EXSPI-8X SPIMetaData Versioning or EXSPI-14X SPIMetaData Versioning policy.

Do *not* delete any default Data Store that is present in the EXSPI Configuration Utility. To delete a DataStore that you have added to the EXSPI Configuration Utility, right-click the DataStore in the left pane, and then click **Remove from Collection**. If the DataStore is associated with an existing collection configuration, the utility removes the DataStore from the collection.

Modifying Collection Configuration

To modify an existing collection configuration:

Do *not* modify the existing default collection configurations. You can modify a collection configuration that you have added.

1 In the left pane, click the collection configuration that you want to modify.

2 In the right pane, right-click the collection configuration block or any other component block to edit.

3 After making changes, click **File** → **Save**.

Do not delete any default collection configuration that is present in the EXSPI Configuration Utility. To delete a collection configuration that you have added to the EXSPI Configuration Utility, right-click the collection in the left pane, and then click **Remove Collection**.

Using Additional Cmdlets

You can create customized cmdlets and use those cmdlets to monitor metric data on a managed node. You can create customized cmdlets to return additional metrics, and configure the Microsoft Exchange SPI to monitor these additional metrics. Perform the following tasks to achieve this:

Task 1: Identify the Microsoft Exchange Server 2007 or Microsoft Exchange Server 2010 Node

Identify the Microsoft Exchange Server 2007 or 2010 node on which you want to add customized cmdlets to observe additional metric data.

Task 2: Create Cmdlets

Create customized cmdlets on the identified nodes.

Task 3: Install Snap-ins

Install customized snap-ins for the newly created cmdlets on the nodes on which you have created new cmdlets.

Task 4: Update the Exspi-exshell.psc1 File

To update the `Exspi-exshell.psc1` file with the new snap-in information, perform these steps:

1. Open the `Exspi-exshell.psc1` file by using a text editor from the location `%OvAgentDir%/bin/instrumentation`.
2. Add the following within the PSSnapin tag:

   <PSSnapIn Name="new_snap-in_name" />

   where new_snap-in_name is the name of newly added snap-in.

Perform this change on the managed node where the snapin is installed. If the snapin is installed on all managed nodes then the `Exspi-exshell.psc1` can be updated at the management server itself.

3. Save the file.

Task 5: Create New Collection Definitions for New Cmdlets

Use the EXSPI Collection Configuration utility and create new collections with the newly added cmdlets. While creating the new collection configuration, note the command displayed in the Schedule Task Policy Command text box.

Task 6: Create a New Scheduled Task Policy

After creating a new collection configuration, perform these steps:

1. Create a new scheduled task policy.
2. In the newly created scheduled task policy, specify the command as mentioned in Task 5.

Task 7: Deploy EXSPI-8X SPIMetaData Versioning or EXSPI-14X SPIMetaData Versioning Policy on Nodes

Deploy the EXSPI-8X SPIMetaData Versioning policy on the nodes where you have created the new cmdlets.

Task 8: Deploy the Scheduled Task Policy

Deploy the created scheduled task policy on the nodes where you have created the new cmdlets.

Configuring Microsoft Exchange SPI for Exchange Server Cluster Environment (Only for Exchange 2007 Nodes)

You can use Microsoft Exchange Server 2007 in a cluster environment where the fail-over capability of Exchange Servers ensures uninterrupted Exchange availability. In the event of a cluster node failure, the Microsoft Exchange SPI automatically switches monitoring activity from the failed node to the active node.

The Microsoft Exchange SPI recognizes Exchange instances in an Exchange cluster by using XML configuration files (`apminfo.xml` and `msexchange.apm.xml`). In the event of failure, these XML files enable the HP Operations agent to automatically perform the following functions:

- Disable instance monitoring on the inactive node

- Enable instance monitoring on the currently active node

To configure the Microsoft Exchange SPI for a cluster environment, perform the following tasks in the order given.

Task 1: Add the Exchange Cluster Nodes to HPOM Console

Identify the cluster nodes of your Exchange environment, and then add those nodes to HPOM console.

If policy autodeployment is disabled, you must launch the necessary polices on newly added cluster nodes.

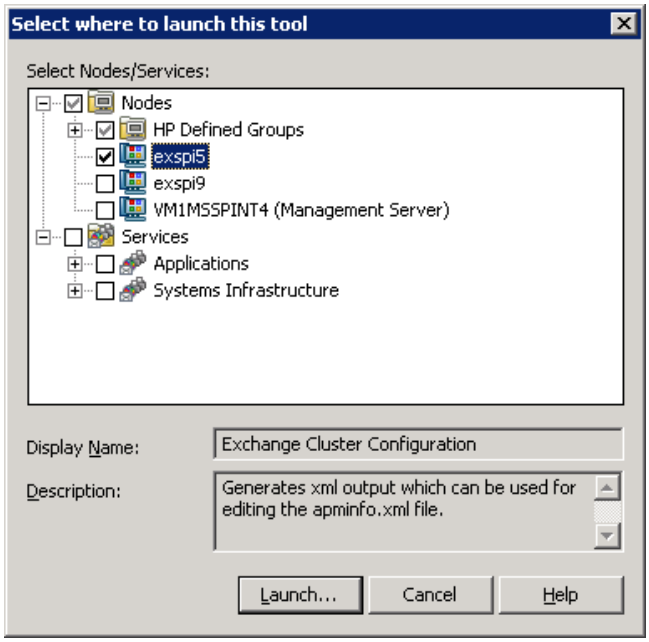
Edit the Discovery policy to run it with the special user privileges. See Editing Discovery Policy. Deploy the policy groups depending on the Server role hosted by the managed node. See Table 4 on page 29 for the specific policy group.

The discovery policy discovers the Exchange cluster and updates the map with cluster topology.

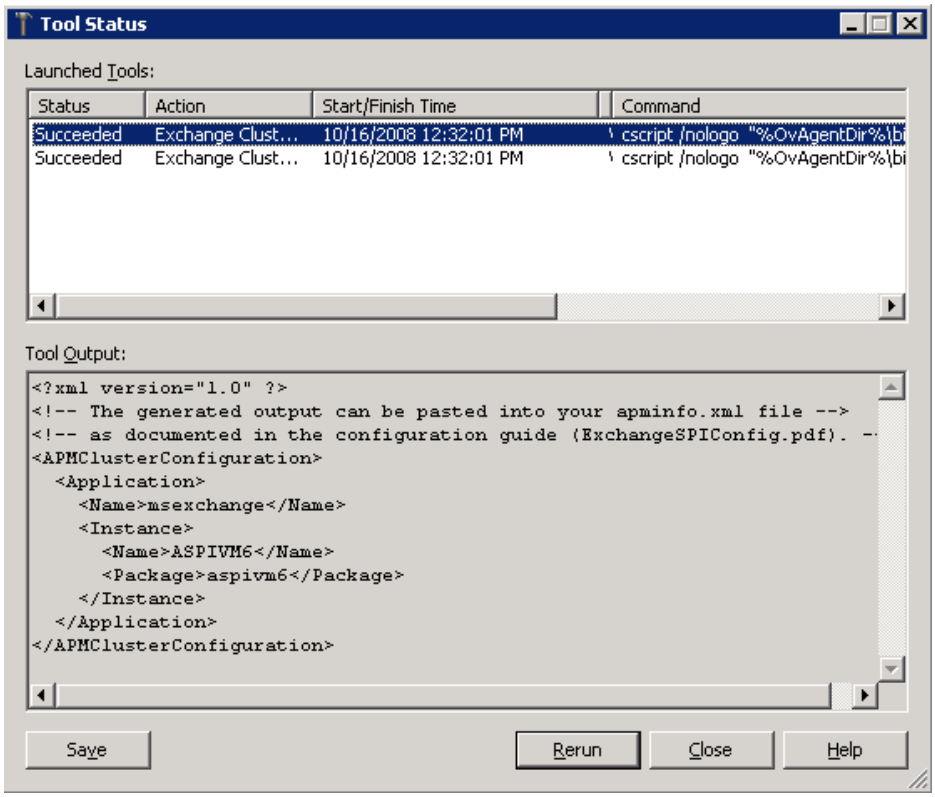
Task 2: Generate Cluster Application Configuration File

You must generate the `apminfo.xml` file to describe the cluster instances (Exchange virtual servers). For this, start the Cluster Configuration tool:

1. Expand **Tools** → **SPI for Exchange** → **Exchange 2007**.
2. In the details pane, double-click **Exchange Cluster Configuration**. The Select where to launch this tool dialog box opens.



3 Click **Launch...**. The Tool Status window appears and displays the output under the Tool Output section.



4 Remove any content above `<?xml version="1.0"?>`.

5 Select the text content under the Tool Output section, and then copy it to a text editor.

6 Save the text as `apminfo.xml` in the `%OvAgentDir%\conf\conf\` location on cluster nodes.

> Before copying the `apminfo.xml` file, you must manually create the `%OvAgentDir%\conf\conf\` folder if it does not exist.

7 Stop and start the agents on the nodes by using the following commands:

```
opcagt -kill
opcagt -start
```

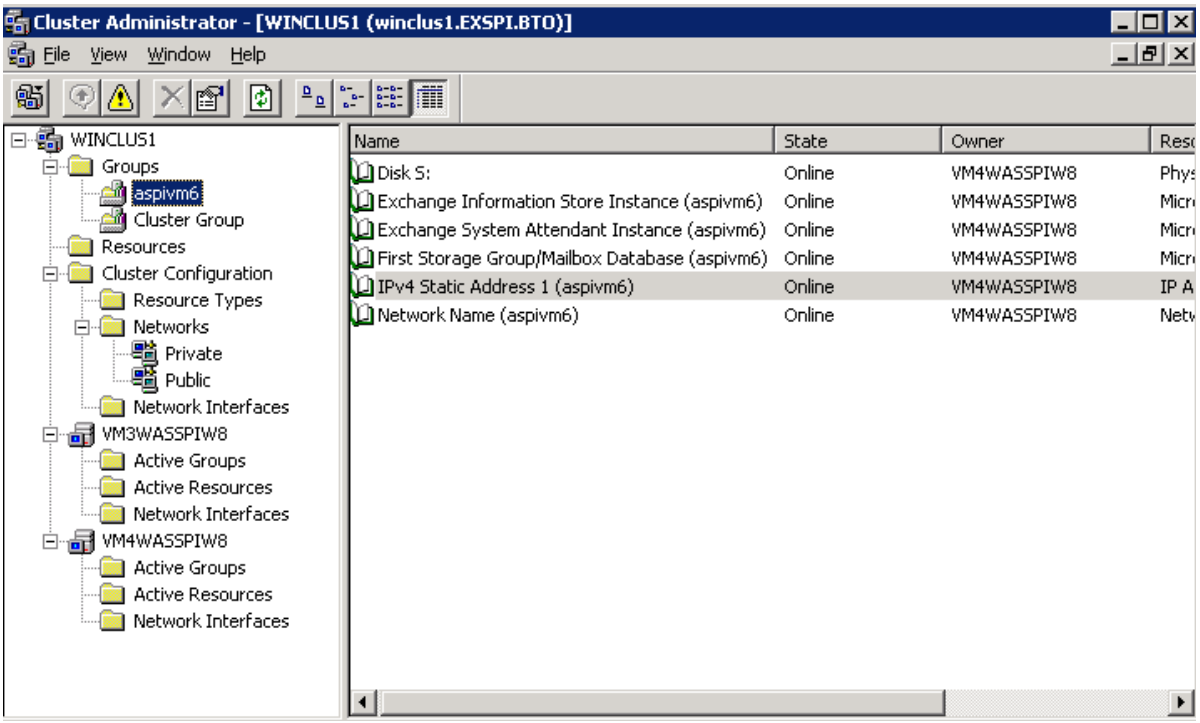
Example apminfo.xml File

In the following example, `aspivm6` is the names of the Exchange resource groups corresponding to the `aspivm6` instance (virtual server):

```
<?xml version="1.0" ?>
<APMClusterConfiguration>
  <Application>
  <Name>msexchange</Name>
   <Instance>
      <Name>ASPIVM6</Name>
       <Package>aspivm6</Package>
    </Instance>
```

```
    </Application>
</APMClusterConfiguration>
```

Figure 4 Example of Exchange Resource Group



Task 3: Copy the Cluster-Aware Policy XML File

Perform the following steps:

1. Deploy the SPI for Exchange instrumentation on the node.
2. Create the `\conf\` folder under `%OvAgentDir%\bin\instrumentation\.`
3. Copy the `msexchange.apm.xml` file from the `%OvAgentDir%\bin\instrumentation\` folder to `%OvAgentDir%\bin\instrumentation\conf\.`
4. Restart the agent.
5. Repeat step 1 through step 4 for all the Exchange nodes.

Make sure to deploy the policy EXSPI-8X Exchange Cluster Discovery SysLog on Windows Server 2003 cluster nodes and the policy EXSPI-8X Exchange Cluster Discovery AppLog 2K8 on Windows Server 2008 cluster nodes, to handle failovers.

Additional Configuration for Policy Name Change

The Microsoft Exchange SPI disables all polices from a cluster node if the node fails, and then enables all polices on the active cluster node. While switching its operation from disabled node to active node, the Microsoft Exchange SPI retrieves policy information from the `msexchange.apm.xml` file. If you change any policy name (or add a new policy) and deploy

the changed policy on a managed cluster node, you must reflect the change in the `msexchange.apm.xml` file as well. To update the `msexchange.apm.xml` file with changed policy information, follow these steps:

1. On the management server, open the `msexchange.apm.xml` file from the `%OvShareDir%\Instrumentation\Categories\SPI for Exchange\Windows\6.0\X64` location by using a text editor.
2. Edit the changed policy names in this file. Add new policy names (within the `Template` markup), if required.
3. For the managed nodes, follow these steps:
   a. Redeploy the SPI for Exchange instrumentation on the node.
   b. Create the `\conf\` folder under `%OvAgentDir%\bin\instrumentation\`.
   c. Copy the `msexchange.apm.xml` file from the `%OvAgentDir%\bin\instrumentation\` folder to `%OvAgentDir%\bin\instrumentation\conf\`.
   d. Restart the agent.
   e. Repeat step a through step d for all nodes.

While redeploying the instrumentation on Microsoft Exchange Server 2007 nodes, see Deploying Instrumentation Categories on Managed Nodes.

Map View for Exchange Cluster Services

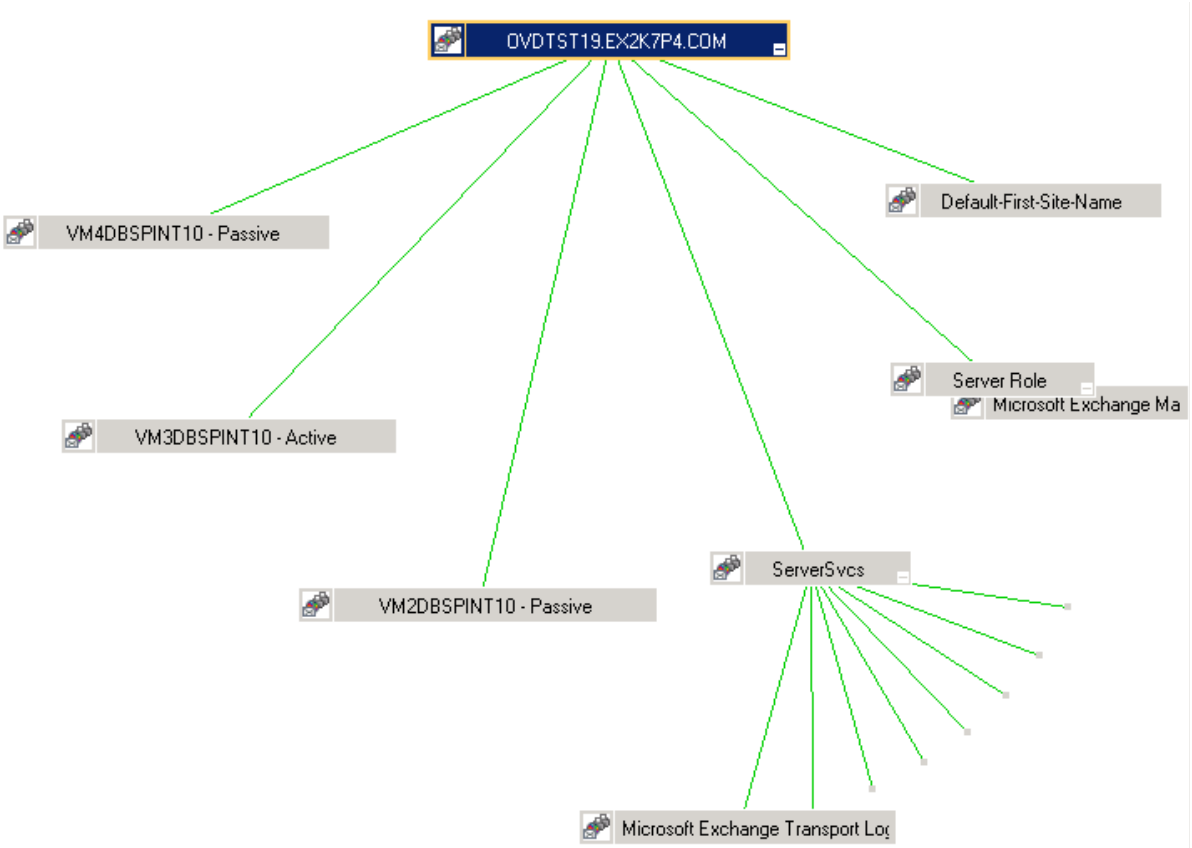
The Microsoft Exchange SPI represents Exchange clusters in the map view. Map view creates one node for each virtual server in the cluster. Because the cluster is properly modeled in the service map, Microsoft Exchange SPI instrumentation and Quick Start polices are auto-deployed to all managed Exchange cluster nodes.

Messages for the Exchange virtual server show up under the Exchange virtual server name in the maps.

For the Exchange Virtual server an EXSPI service discovery hosted-on hierarchy is created within a Clusters container. This allows messages to be sent to the hosted-on hierarchy.

This same hierarchy is also created as virtual nodes under the Exchange Virtual Server. A dependency is created from each Virtual Exchange Server virtual node to its corresponding Cluster hosted-on node. Messages and status will then propagate to the correct Virtual Exchange Server virtual node.

Figure 5 Service Map in Clustered Environment



When a fail-over happens, dependencies to the failed node will be removed and replaced with new dependencies to the newly active node.

When a failover happens, messages that occurred before the failover will not be propagated to the virtual node.

Configuring Microsoft Exchange SPI for Monitoring Exchange Server 2010

To configure the Microsoft Exchange SPI for monitoring the Exchange Server 2010, perform the following steps:

1. Manage Exchange 2010 nodes from the management server.
2. Deploy the following instrumentation categories to the managed Exchange 2010 nodes:
   - Exchange2k10_Core
   - Exchange2k10_Discovery
   - SPIDataCollector

   For more information on assigning instrumentation categories to Exchange nodes, see Deploying Instrumentation Categories on Managed Nodes on page 22.
3. Run the following tools on the Exchange 2010 nodes:

- **SPI for Exchange → Exchange 2010 → Edit XPL Configuration File**
- **SPI for Exchange → Exchange 2010 → Create Data Sources**
- **SPI for Exchange → Exchange 2010 → Register DataCollector**

4 Modify the policies listed in Table 7 to run as user with the following privileges:

- Local Administrator of Exchange Server 2010
- Server Management
- View-Only Organization Management
- Records Management

The following table lists the policies to modify.

Table 7 Policies

EXSPI-14X-Dc-HubAgentLogBlockedData
EXSPI-14X-Dc-HubAgentLogBlocked
EXSPI-14X-HubGetBlockedMailsCount
EXSPI-14XCheck If Mailbox Circular Logging Disabled
EXSPI-14X Check If Public Folder Circular Logging Disabled
EXSPI-14X Check Mailbox Circular Logging Enabled
EXSPI-14X Check Outlook Anywhere Enabled
EXSPI-14X Check Outlook Anywhere Not Enabled
EXSPI-14X Check If Public Folder Circular Logging Enabled
EXSPI-14X Check Tracking Log Settings
EXSPI-14X Dc-Get Top Destination Details
EXSPI-14X Dc-Get Top Recipient Details
EXSPI-14X Dc-Get Top Sender Details
EXSPI-14X Dc-Get Top Source Details
EXSPI-14X Dc-GetMailFlowLatency
EXSPI-14X Dc Replication Summary
EXSPI-14X Get Configuration of The Transport Agent
EXSPI-14X Get Exchange Availability
EXSPI-14X Get Mailbox Details
EXSPI-14X Get Mailbox IS Sum Data
EXSPI-14X Get Public Folder Details
EXSPI-14X Get Public IS Sum Data
EXSPI-14X Get Queue Data
EXSPI-14X Get UMHuntGroup Details

Table 7 Policies
EXSPI-14X Get UMMailbox Pin Details
EXSPI-14X Get UMServer Details
EXSPI-14X Get Unified Messaging Mailbox Details
EXSPI-14X GetUM IPGatewayDetails
EXSPI-14X Test Mapi Connectivity
Exchange 2010 Discovery

5 Modify the policies listed in Table 8 to run as user with the following privileges:

— Local Administrator of Exchange Edge Server 2010

The following table lists the policies to modify.

Table 8 Policies
EXSPI-14X-Dc-EdgeAgentLogBlockedData
EXSPI-14X-Dc-EdgeAgentLogBlockedRcpts
EXSPI-14X-EdgeGetBlockedMailsCount
EXSPI-14X Edge Check Tracking Log Settings
EXSPI-14X Edge Get Configuration of Transport Agent
EXSPI-14X Edge Get Queue Data
Exchange 2010 Discovery

6 Deploy the appropriate policies based on the roles hosted by the Exchange Server.

For more information on the server roles and appropriate policies, see Server Role and Policy Group on page 29.

7 Use the EXSPI Configuration Utility tool. For more information, see Using EXSPI Configuration Utility on page 33.

4 Using Policies

Policies monitor the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010 environments and run according to rules and schedule specifications. Policies contain the rules for interpreting Microsoft Exchange Server states or conditions.

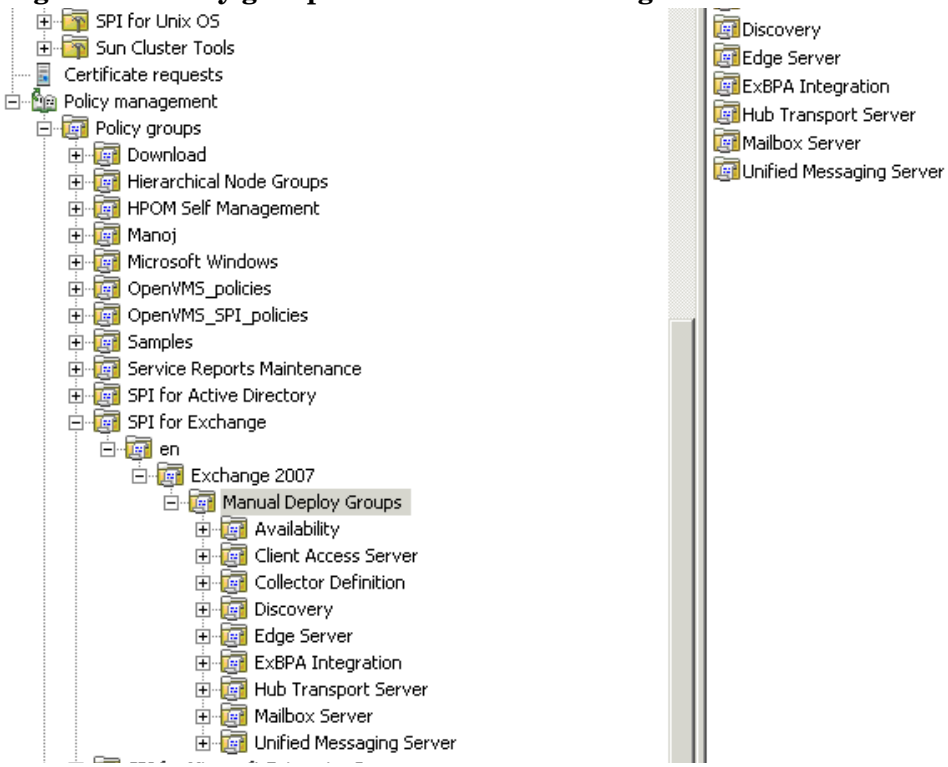
Policy Group and Policy Type

The policies of the Microsoft Exchange SPI in the HPOM console are grouped into policy groups and policy types.

Policy Group

A policy group organizes policies according to the deployment method and area to be targeted for discovery or monitoring. Deployment in Microsoft Exchange SPI is manual. To view the manually deployed policies in the Microsoft Exchange SPI, in the console tree of the HPOM console, expand **Policy Management** → **Policy Groups** → **SPI for Exchange** → **en** → **Exchange 2007** or **Exchange 2010** → **Manual Deploy Groups**. The policies are displayed in each sub-groups of the Microsoft Exchange SPI.

Figure 6 Policy groups for Microsoft Exchange Server 2007



You can customize the threshold of Microsoft Exchange SPI policy. For more information, see Customizing policies.

The Microsoft Exchange SPI has the following policy groups depending on the Exchange server roles:

- Availability
- Client Access Server
- Collector Definition
- Discovery
- Edge Server
- ExBPA Integration
- Hub Transport Server
- Mailbox Server
- Unified Messaging Server

Policy Type

Agent policies grouped by type organize policies according to type. The Microsoft Exchange SPI has the following policy types:

- Service Auto-Discovery
- Scheduled Task
- Measurement Threshold
- Windows Event Log
- Windows Management Interface
- ConfigFile
- Open Message Interface
- LogFile Entry

For more information about policies in each policy group and their policy types, see *HP Operations Smart Plug-in for Microsoft Exchange Online Help* or *HP Operations Smart Plug-in for Microsoft Exchange Online Help PDF*.

5 Tools

The Microsoft Exchange SPI uses different tools to monitor the Microsoft Exchange Server 2007 and 2010 environments.

Following are the tools for Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010:

- EXSPI Configuration Utility
- Create Data Sources
- Edit XPL Configuration File
- Delete Older EXSPI Artifacts
- Delete Older EXSPI Classes
- Cleanup Older EXSPI Artifacts from Server
- Register DataCollector
- Start PowerShell Collector (only for Exchange 2007)
- Stop PowerShell Collector (only for Exchange 2007)
- Exchange Cluster Configuration
- EXSPI Trace
- Self-Healing Info
- Self-Healing Verification
- HP Operations Topology Viewer

For more information about each tool, see the *Microsoft Exchange SPI Online Help*.

Starting Microsoft Exchange Tools

To start a tool of Microsoft Exchange SPI, follow these steps:

1. Expand **Tools** → **SPI for Exchange** → **Exchange 2007** or **Exchange 2010**. The system lists the tools for Microsoft Exchange SPI.
2. Double-click the tool to start. A window displays all the managed nodes.
3. Select the Exchange managed nodes, and then click **Launch...**. The tool status dialog box appears showing the status of tool.

   After tool is started, **Rerun** and **Save** buttons are enabled.
4. Click **Save** to save the tool output.

5 Click **Rerun** if you want to run the tool again.

When starting the Start PowerShell Collector tool, the Start PowerShell Collector dialog box does not return any output. The status of the tool continues to display `Starting`. To check if the Collector has started, close the tool output and check the Task Manager on the managed node.

HP Operations Topology Viewer

The HP Operations Topology Viewer provides a quick means to seeing an Exchange environment, providing a hierarchical view in a tree (left pane), and a topological view in a map (right pane). The left pane shows the organization/admin groups/Microsoft Exchange servers/connectors/routing groups components, while the map in the right pane graphically represents servers/routing groups/connectors links and connections.

After you launch the HP Operations Topology Viewer and enter domain controller access information, the tool gathers data from the domain controller and Microsoft Exchange servers. From this information a map is created, displaying servers, connectors, and routing groups.

The Topology Viewer provides a view that reflects the Active Directory site/server replication information/Exchange organization information at the time you connect to a server. The view remains static until you refresh it. To update the view, select from the menu **File** → **Refresh Data**. The map is then updated.

In the Topology Viewer window right pane, the map initially shows Routing group connectors, external mail connectors. You can display the server labels and modify the display by selecting **View** → **Properties**. The Properties page allows you many options for how to display the map: you can show or hide connectors between routing groups, server labels and roles, DC Roles.

Using HP Operations Topology Viewer

After you complete steps mentioned to connect to a Microsoft Active Directory domain controller, the Topology Viewer tool can gather information. This information is organized into a tree, showing Microsoft Exchange Server components on the left and a map graphically representing the Microsoft Exchange Server organization on the right.

You can modify the default display by using the **View** menu and selecting **Properties...**. The Properties page has three tabbed pages that show additional information and allow you to change the display (**Visibility** and **Colors and Lines**).

If the logged-in user account has proper access to the DC to which you are attempting to connect, no alternate credentials are necessary.

HP Operations Topology Viewer Toolbar

The following table lists the HP Operations Topology Viewer toolbar functions and the icons.

Table 9 HP Operations Topology Viewer Toolbar

Icon	Function
	Starts a new file, which appears as an empty grid; you can then click the Add Forest button to populate the empty view. The button allows you to transition to a new view (for example, an Add a Forest), without adding to or changing the current view if the current view has been saved.
	Allows you to open a file of a previously saved view.
	Saves the current view to a file.
	Exports the current view and saves it to a graphic format of your choice, such as .png or .bmp. (The default format is .png.
	Allows you to add a forest by opening the Add Forest dialog, where you enter server connection information.
	Refreshes the data by checking information on the current connection.
	Zooms out the map view to the maximum degree.
	Zooms out the map view incrementally.
	Resets the map view to the default.
	Zooms in the map view incrementally.
	Zooms in the map view to the maximum degree.
	Shows the next available top-level view in the forest.
	Displays the navigator, which shows a thumbnail of the entire map, surrounding the area of focus with a blue square. You can change the map focus by repositioning the blue square in the Navigator.
	Displays the Topology Viewer online Help.

HP Operations Topology Viewer Menu

The following table lists the HP Operations Topology Viewer menu commands.

Table 10 HP Operations Topology Viewer Menus

Menu	Command	Function
File	New...	Opens a new file (empty grid); allows you to transition from the current view to a new view.
	Open...	Opens a selected, saved file that shows the layout as it was saved.
	Save	Saves the layout as the default layout.
	Save as...	Saves the layout to a file so that you can load it when desired.
	Export View...	Saves the currently displayed map in a graphical format of your choice.
	Add Forest...	Opens the Add Forest dialog, where successful connection to a server generates the replicated information within that forest and displays the information in the HP Operations Topology Viewer tree and map.
	Refresh Data	Reconnects to the server and updates the view with changes, if any, since the last connection.

Menu	Command	Function
View	Zoom	Allows you to zoom-in closer for greatest magnification or zoom-out farther for overall view. Minimum is at greatest degree zoomed out. Maximum is at greatest degree zoomed in.
	Next View	Shows the next view available in the right pane.
	Navigator	Shows a thumbnail of the entire map (including any area outside the current display) with a blue box indicating the current visible display.
	Legend	Displays the legend, which explains the meaning of the symbols used in the map located next to each server.
	Clear Find	When enabled, means that a server or site in the tree or the map has been right-clicked and Find in View or Find in Tree selected, resulting in selecting the corresponding item; clicking Clear Find returns the display to its default status with no elements selected.
View	Toolbar	Toggles on/off the display of the Topology Viewer toolbar buttons.
	Status Bar	Toggles on/off the display of the Topology Viewer status bar (located at the bottom of the Topology Viewer window).
	Properties...	Opens the Site Topology Properties dialog, which allows you to hide/show elements in the map and to modify the map appearance.
Window	Title Page	Displays the HP Operations Topology Viewer title page.
	Site Topology	Displays the Active Directory topology of the current forest.
	Exchange Topology	Displays the Exchange messaging view (with routing groups) of the current forest.
Help	HP Operations Topology Viewer Help	Displays online Help for HP Operations Topology Viewer.
	About HP Operations Topology Viewer...	Displays the HP Operations Topology Viewer version number.

HP Operations Topology Viewer Map

Map connection lines labels: You can choose which connection lines to display and whether to display server, routing group, and external mail connector labels by right-clicking the map, selecting **View → Properties...**. In the Exchange Topology View Properties page, select the Colors and Lines tabbed page. The connections are represented in default colors as follows:

- Routing Group (Represented in green): This acts as a connector that connects one routing group to the other logically. The Routing Group shows a logical routing of mail within the organization
- External Mail Connectors (Represented in blue): This represents the different send connectors which are configured in an organization having a Microsoft Exchange setup. An external connector shows the logical connection between a source server and a

destination server. These connectors describe the way the nodes are running in a Microsoft Exchange 2007 environment and how the nodes which have the Edge Transport server or the Hub Transport server installed communicate:

- With each other
- With the Internet
- With servers that are running Exchange 2000 or Exchange 2003
- With other messaging systems

The Send connectors send outbound messages. To enable communication, set one or more source servers on a Send connector. The source servers act as transport servers which are responsible to handle message delivery along with that connector. When a Microsoft Exchange Server 2007 receives messages for a remote destination, they are sent to the source server of a Send connector. This Send connector is configured to send the e-mail to the destination domain. Send connectors are not applied to a single source.

- Routing Groups (Represented in green): This represents the logical grouping of different components which play a role a routing a message to the recipients. These components control the flow of the messages between various servers like Hub Transport servers, Edge Transport servers, servers which are running on Microsoft Exchange 2000 or 2003, and other SMTP servers. You can control the flow of the messages between these servers by configuring the settings of these components.

The Topology Viewer provides a view that reflects the Active Directory site/server replication information/Exchange organization information at the time you connect to a server. The view remains static until you refresh it. To update the view, select from the menu **File** → **Refresh Data**. The map is then updated.

6 Integrating Microsoft Exchange SPI with Reporting and Graphing Solutions

Reports and graphs provide you with a complete view of the performance of the components of the Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010.

Reports and Graphs

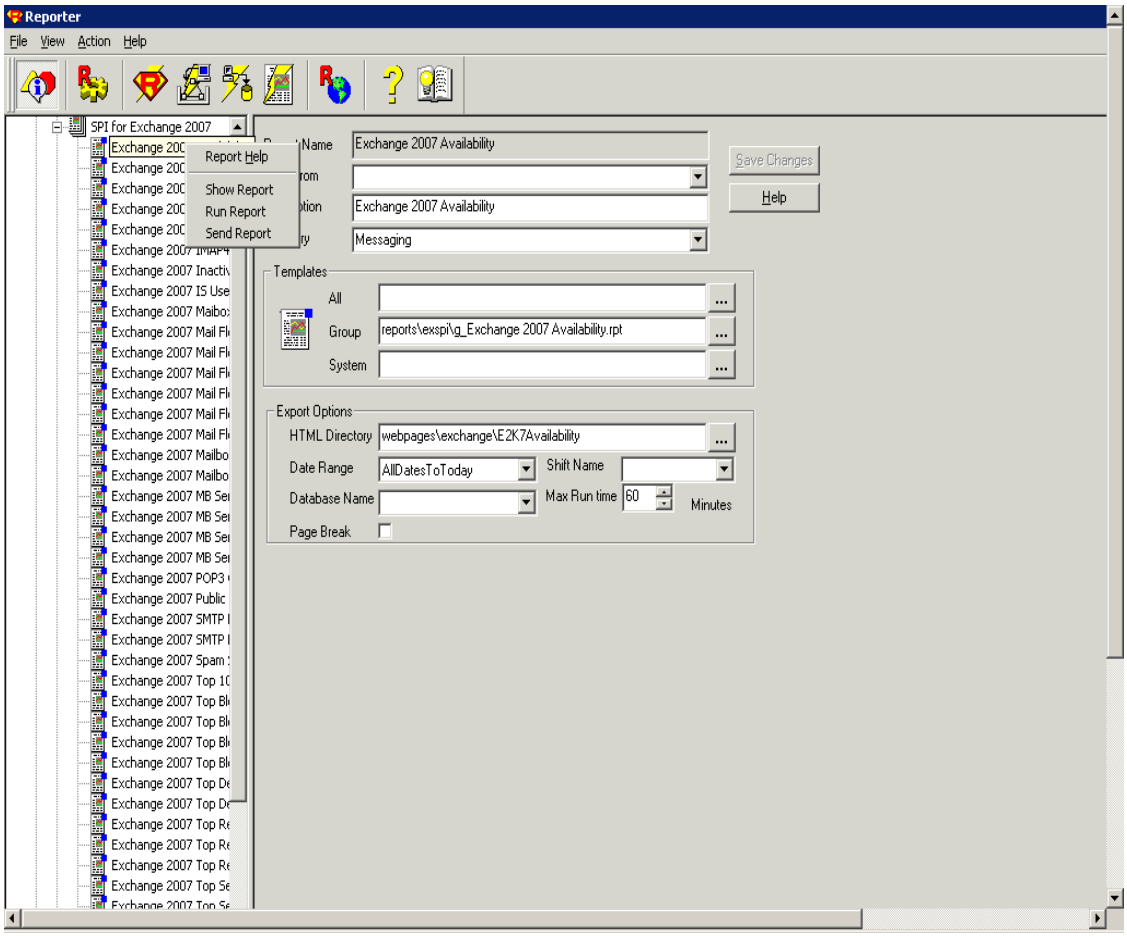
Report- and graph-generating templates are installed after you install the Microsoft Exchange SPI. They cover updates on the availability or activity or both in Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010 such as SMTP, MTA, processes for activity and status, and IS Public or Private Mailbox.

Time Interval for Exchange SPI Reports or Graphs

The Microsoft Exchange SPI reports and graphs are not available until data has been gathered to the management server from the managed nodes. This occurs each night, so at least one day of activity is needed for the reports to populate. Where a report or graph type requires data from a Sat/Sun collection, those reports or graphs or both require a weekend to pass.

Integrating Microsoft Exchange SPI with HP Reporter

You must install EXSPI Reporter package on HP Reporter Server to use the Microsoft Exchange SPI reports. For this, run `Setup.exe`. This setup installs the Microsoft Exchange SPI Report Package within the Reporter server. After you complete the installation, configure the Reporter to generate reports.



Installing Report Package

To install the Microsoft Exchange SPI Reporter Package on a stand-alone Reporter server:

1. Insert the HP Operations Smart Plug-ins DVD.
2. Double-click the file `Setup.exe`. (See and follow the steps of installation on Management Server for Windows.). A dialog box opens.
3. Click **Finish** to complete the installation.

Configuring Reporter Package

To configure the Microsoft Exchange SPI Reporter Package:

1. Open the Reporter main window and check the status pane to note the changes to the Reporter configuration, which include uploading the Microsoft Exchange SPI reports.

   The Microsoft Exchange SPI Reports are automatically assigned to the **ALL** group in the Reporter main window. (See for HPOM Report list.)
2. Add group and single system reports by assigning reports as desired.

Reports are available for viewing the following day.

Identify the Microsoft Exchange SPI reports of group and single systems by their full name; for example, **abc.xyz.com** is acceptable while **abc** is not.

Accessing Reporter Help

Instructions are available in the HP Reporter Help for assigning Microsoft Exchange SPI reports to the targeted nodes.

To access HP Reporter Help, follow these steps:

1. Right-click **Reports** or **Discovered Systems** in the left panel of the HP Reporter main window.
2. Select **Report Help** or **Discovered Systems** Help from the sub-menu that appears. The HP Reporter Help appears.

For more information, see the *Concepts Guide* and *Installation and Special Configurations Guide* for HP Reporter.

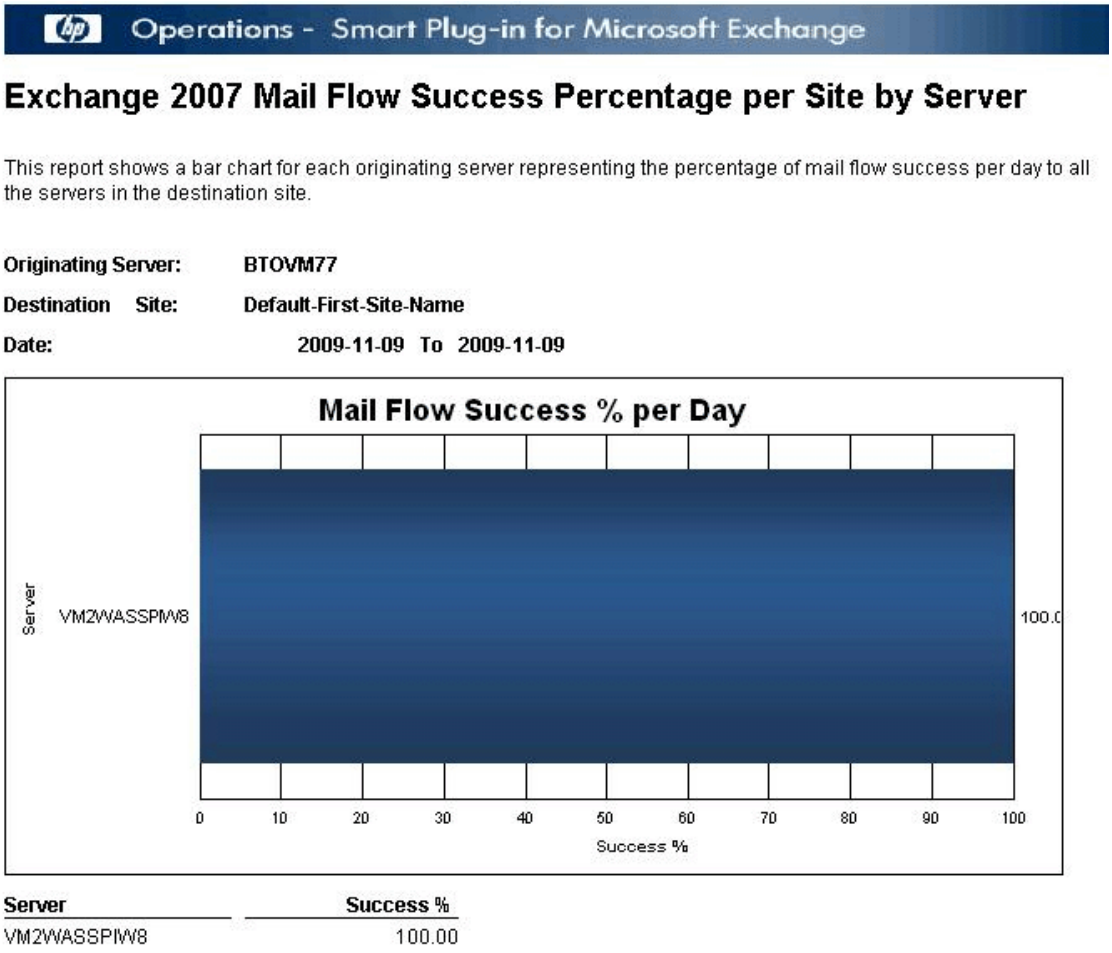
Generating Reports

After you install the Microsoft Exchange SPI, the HPOM generates reports using the SPI-collected data for Microsoft Exchange Server 2007 and Microsoft Exchange Server 2010. HPOM runs the reports regularly on a nightly schedule. You can see the updated reports every day because the HPOM, by default, re-generates reports every night with the day's data.

The report data of Microsoft Exchange SPI is collected based on metrics used for each report. The HP Reporter identifies the data through metric variables. This data is stored in the MS SQL Reporter database.

You can access the reports of Microsoft Exchange SPI from the **Report**s area of the HPOM console. You can find complete description of all the reports in *Microsoft Exchange SPI Online Help*.

Figure 7 Generating Reports



Integrating Microsoft Exchange SPI with HP Performance Manager

The Microsoft Exchange SPI comes with a set of preconfigured graph templates. Ensure that these graph templates are installed on an HP Performance Manager system, and that the data store (CODA or HP Performance Agent) runs on the managed node.

To integrate the Microsoft Exchange SPI with HP Performance Manager, follow these steps:

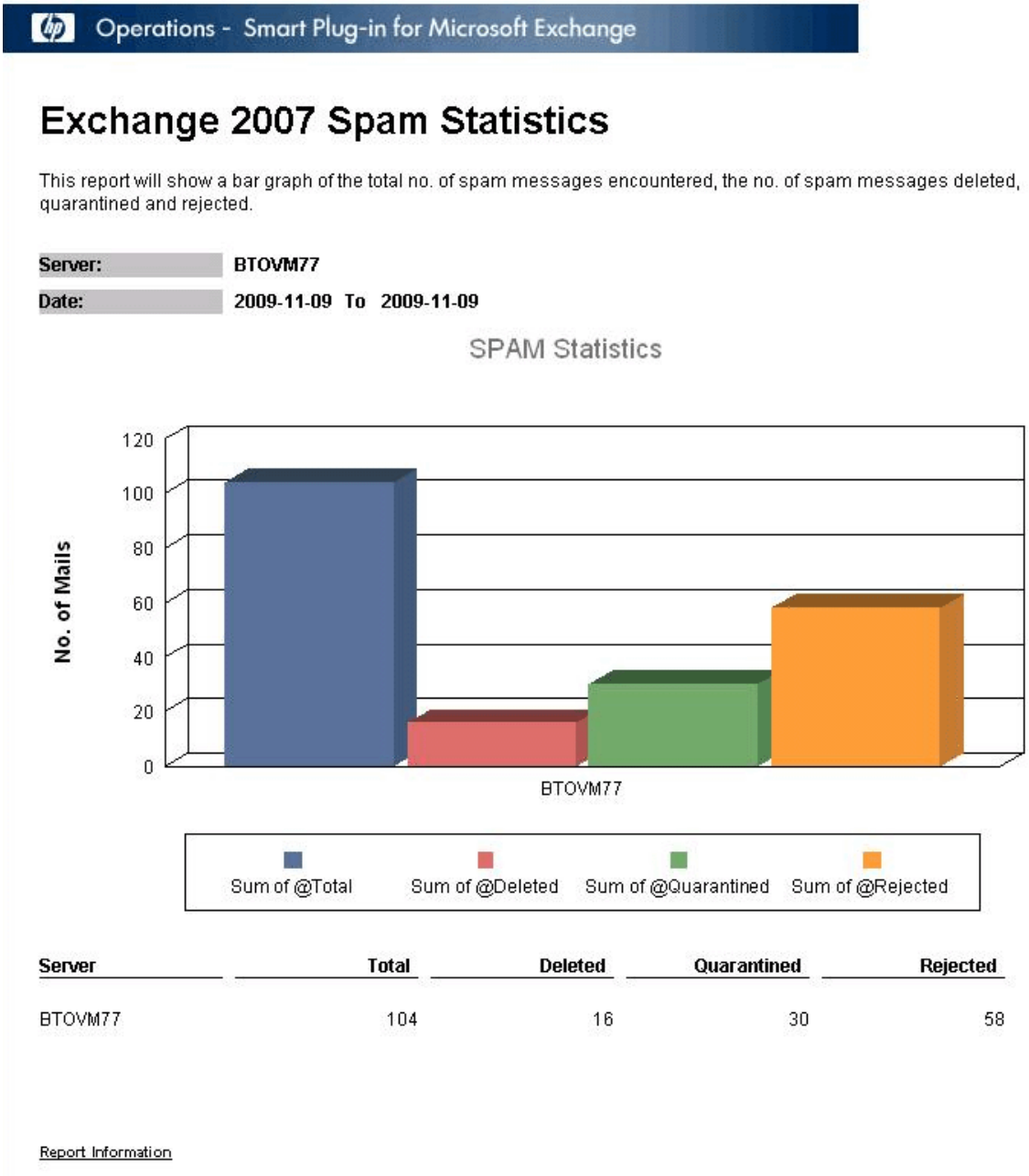
1. Install and configure the Microsoft Exchange SPI.
2. Install the graph package. To install the graph package:
   a. Insert the HP Operations Smart Plug-ins DVD.
   b. Double-click the `Setup.exe` file and follow the steps of Installing SPI on a Standalone Management Server on page 19.
   c. Select **Finish** to complete the installation.

For more information, see the *Installation, Upgrade and Migration Guide* for HP Performance Manager.

Generating Graphs

You can generate the Microsoft Exchange SPI graphs on HP Performance Manager on a stand-alone Windows Server.

Figure 8 Generating Graphs



7 Troubleshooting

This chapter includes troubleshooting some areas of the Microsoft Exchange SPI and provides solutions. The methods described may or may not require support assistance.

Discovery

The following sections describe the possible causes and suggested actions for the failed discovery of the Microsoft Exchange Server services.

Insufficient Privilege

In some cases the Microsoft Exchange SPI fails to discover the Microsoft Exchange Server services. The possible cause and suggested action are as follows:

- *Possible cause:* The account with which the Discovery policy (**Policy Management** → **Policy Groups** → **SPI for Exchange** → **en** → **Exchange 2007** or **Exchange 2010** → **Manual Deploy Groups** → **Discovery**) is run by the HP Operations agent, does not have the privileges to connect to the Microsoft Exchange Server and retrieve data.
- *Suggested action:* Ensure that administrator credentials are provided in the Discovery policy and then redeploy the policy.

Failed Binary on Managed Node

In some cases the HP Operations agent fails to update the discovered services to the HPOM management server. The possible cause and suggested action are as follows:

- *Possible cause:* The output of the Microsoft Exchange SPI discovery policy is not a properly formatted `xml` file.
- *Suggested action:* Run the Microsoft Exchange SPI discovery binary on the managed node. Follow these steps:
  a. Log on to the managed node as an administrator.
  b. From the command prompt, open the instrumentation directory.
  c. Run the **`Exchange_discovery.exe > out.xml`** command.
  d. Check if `out.xml` is in the required xml format by opening it in the web browser.

Discovery Binary times-out on Managed Node

Sometimes, the Microsoft Exchange SPI discovery binary takes a lot of time to complete. In such cases, the discovery agent (agtrep) forcefully terminates the Microsoft Exchange SPI discovery binary before it completes. This causes the Microsoft Exchange SPI discovery failure.

You can identify the Microsoft Exchange SPI discovery binary termination by agtrep through the following statements in the `System.txt` of the managed node:

- `0: ERR: Thu Nov 12 10:52:01 2009: agtrep (4732/5412): (agtrep-151) Timeout occurred when executing action "C:\Windows\system32\cmd.exe /C ""C:/ProgramData/HP/HP BTO Software/bin/instrumentation/Exchange_Discovery.exe""" - will be terminated.`
- `0: ERR: Thu Nov 12 10:52:01 2009: agtrep (4732/5412): (agtrep-133) No output received from discovery policy action`

The possible cause and suggested action for discovery failure are as follows:

- *Probable cause:* The Microsoft Exchange SPI discovery binary does not complete within the ACTION_TIMEOUT period of agtrep.
- *Suggested Action:* Increase the ACTION_TIMEOUT of agtrep to give sufficient time for the Microsoft Exchange SPI discovery binary to complete.

  To increase ACTION_TIMEOUT of agtrep, follow these steps:

  a. Open the command prompt on managed node.

  b. Run the command **`ovconfchg -edit`** to edit the agent configuration file. The default value is ACTION_TIMEOUT=3

  c. Increase the value of the ACTION_TIMEOUT. For example, ACTION_TIMEOUT=10

  d. Save and close the file.

  e. Run the Microsoft Exchange SPI discovery.

Tracing

With the help of the EXSPI Trace tool, you can obtain troubleshooting information from the managed nodes. The Microsoft Exchange SPI stores the troubleshooting information as trace files in the `%OvDataDir%\bin\exspi\log` location on a managed node.

This tool enables you to set the following two trace levels:

- <T1Value> - specifies trace level for Scheduler and CollectorServer. The value is either 0 or 1.
- <T2Value> - specifies trace level for power shell script file. The value ranges from 0 to 2, where 2 is the maximum possible value.

Each trace statement has a unique ID to distinguish between the different instances of the same collection that run simultaneously.

To launch the EXSPI Trace tool on a managed node, perform the following steps:

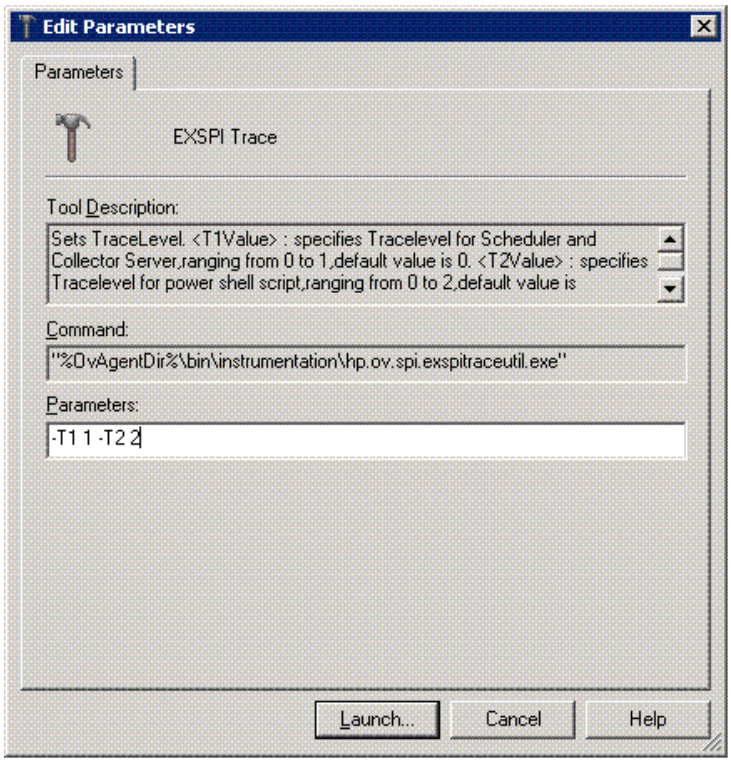
1. In the console tree, expand **Tools** → **SPI for Exchange**, and then double-click **Exchange 2007** or **Exchange 2010**.

2 In the details pane, double-click **EXSPI Trace**. The Select where to launch this tool dialog box opens.

3 Select a node, and then click **Launch**. The Edit Parameters dialog box opens.

The Edit Parameters box contains values as -T1 0 -T2 0. You can replace the value with 0. For -T1 replace with 0 or 1 while for -T2 replace the value with 0, 1, or 2. This sets the trace value.

4 Click **Launch**.



Reports and Graphs

The following sections describe the possible cause and suggested action for the failed generation of data in Microsoft Exchange SPI reports and graphs.

Reports and Graphs are not generated

In some cases, the reports and graphs are not generated. The possible cause and suggested action are as follows:

- *Possible cause:* The appropriate policies are not deployed to the respective Microsoft Exchange SPI reports and graphs. The policy, therefore, fails to collect the data which the HP Reporter generates as report. Failure to deploy the appropriate policy also disables the HP PM to generate graphs.
- *Suggested action:* See Appendix B Report, Report Table, Data Store, and Policy Mapping Details in *HP Operations Smart Plug-in for Microsoft Exchange Server Reference Guide* to know the appropriate policy for each Microsoft Exchange SPI report. See also Graphs,

Data Store, and Policy Mapping Details in *HP Operations Smart Plug-in for Microsoft Exchange Server Reference Guide* to know the appropriate policy for each Microsoft Exchange SPI graph. Deploy the policy accordingly.

For troubleshooting reports see *Troubleshooting Microsoft Exchange SPI Reports* in *HP Operations Smart Plug-in for Microsoft Exchange Server Online Help*.

Data Logging Policies cannot log Data

In some cases the data logging policies cannot log data. The possible cause and the suggested action are as follows:

- *Possible cause:* The data source is not created in the datastores—CODA or OVPA.
- *Suggested action:* Check if the datasource EX2007_DATA or EXSPI_DATA is created. To do this:
  a. Log on to the managed node as an administrator.
  b. From the command prompt run the ovcodautil -obj > out.txt command.
  c. Check the `out.txt` file to ensure that the datasource EX2007_DATA or EXSPI_DATA is created.

Browser Crashes while Viewing HTML Report

While viewing the reports in HTML format, the browser crashes. The possible cause and the suggested action are as follows:

- *Possible cause:* The browser cannot handle huge amount of data.
- *Suggested action:* View the reports in PDF format.

Reports Fails with Oracle Database

Some of the reports fail due to invalid Reporter ODBC driver.

- *Possible cause:* The versions of Oracle client to access Oracle database do not match.
- *Suggested action:* Use Oracle client 9.2.0 to access Oracle 9.2.0 database and 10gR2 client to access 10gR2 database.

Modifying Policy Names

If you change the default name of the following Microsoft Exchange SPI policies, ensure to change the SPIMetaData.xml also:

Table 11 Policies

For Exchange 2007	For Exchange 2010
EXSPI-8X_ReplicationCopyQueueLength	EXSPI-14X_ReplicationCopyQueueLength
EXSPI-8X_ReplicationReplayQueueLength	EXSPI-14X_ReplicationReplayQueueLength
EXSPI-8X-HubMonitorBlockedMails	EXSPI-14X-HubMonitorBlockedMails
EXSPI-8X-EdgeMonitorBlockedMails	EXSPI-14X-EdgeMonitorBlockedMails
EXSPI-8X_Check_IMAP4ServiceStatus	EXSPI-14X_Check_IMAP4ServiceStatus
EXSPI-8X_Check_POP3ServiceStatus	EXSPI-14X_Check_POP3ServiceStatus
EXSPI-8X_Check_ADTopologyServiceStatus	EXSPI-14X_Check_ADTopologyServiceStatus
EXSPI-8X_Check_CASFileDistributionServiceStatus	EXSPI-14X_Check_CASFileDistributionServiceStatus

Change all references to these policies to new policy names in the policy command line and in the SPIMetaData.xml.

For details on each Microsoft Exchange SPI policy, see *HP Operations Smart Plug-in for Microsoft Exchange Server Online Help* or *HP Operations Smart Plug-in for Microsoft Exchange Server Online Help PDF*.

8 Removing Microsoft Exchange SPI

To uninstall Microsoft Exchange SPI undeploy all the policies and policy groups from the managed nodes, and then from the management server. You must remove SPI components manually before removing SPI from the management server using the DVD.

You can uninstall the Microsoft Exchange SPI using any of the following:

- SPI DVD
- Windows Control Panel

Removing Microsoft Exchange SPI Components

The Microsoft Exchange SPI components include policies, reporting package, and graphing package.

Task 1: Remove the Microsoft Exchange SPI policies from all managed nodes

1. At the console, expand **Policy Management** → **Policy groups**.
2. Right-click **SPI for Exchange**, and select **All Tasks** → **Uninstall from...**.The Uninstall policies from... dialog box opens.
3. Select the check box corresponding to one or more nodes from which you want to remove the policies.
4. Click **OK**.

To verify policies if the policies are undeployed, at the HPOM console expand the **Nodes**, right-click the node from which the policy is removed, and select **View** → **Policy Inventory**. The Microsoft Exchange SPI policies are not listed there.

Task 2: Remove Microsoft Exchange SPI programs from the HPOM management server

1. Insert the *HP Operations Smart Plug-ins* DVD.
2. Follow the instructions as they appear on the screen and start the uninstall procedure by selecting **Remove products**.
3. In the **Product Selection Uninstall** window, select **Microsoft Exchange (SPI)**, and click **Next**.
4. In the next window, select **Remove.**
5. Click **Finish** to complete the uninstallation.

Task 3: Remove the Microsoft Exchange SPI Policies from the Management Server

1. Expand **Policy Management** → **Policy grouped by type** → **Agent policies**.
2. Click each policy type. The right pane shows the policies in the policy group.
3. Select the all versions of the policies starting with **EXSPI**.
4. Right-click the policy. Select **All Tasks** → **Delete version from server.**

Removing Microsoft Exchange SPI from Management Server

To remove SPI from the management server, perform the following steps:

1 From the Start menu, select **Settings** → **Control Panel** → **Add/Remove Programs**.

When you uninstall the SPI using Windows Control Panel, there are two options:

- Remove selected SPIs
- Remove HPOM for Windows

If you want to remove both HPOM and SPIs, you must first remove all SPIs from managed nodes, and then from the management server. You can then remove SPI from HPOM.

2 Select **HP Operations Smart Plug-ins**, and click **Change**.

3 Click **Next** on the Welcome screen.

4 Select **Remove Programs** → **HP Operations Smart Plug-ins**.

5 Select **Microsoft Exchange Server - SPI**.

6 Click Next.

7 Click Remove. A message appears stating that Microsoft Exchange SPI is removed.

Removing Reporter package

The HP Reporter package can be uninstalled using the Control Panel or the `.msi` file.

Using Control Panel

To uninstall Reporter package, perform the following steps:

1 From the Start menu, select **Settings** → **Control Panel** → **Add/Remove Programs**.

2 Select **HP Operations Smart Plug-in for Microsoft Exchange Server - Reporter Component Integration**, and click **Change**.

3 Complete the instructions until a message appears stating that HP Reporter is removed.

Using .msi File

To uninstall the Reporter package using `.msi` file, perform the following steps:

1 Browse to:

`<SPI DVD>\SPIs\x64` or `x86\Exchange SPI Reporter Package\EXSPI-Reporter.msi`

2 Right-click `EXSPI-Reporter.msi`, and click **Uninstall**.

3 Confirm the removal of the reporting package by clicking **Yes**.

Removing Graph package

The Graph package can be uninstalled using the Control Panel or the `.msi` file.

Using Control Panel

To uninstall the Graph package, perform the following steps:

1. From the Start menu, select **Settings** → **Control Panel** → **Add/Remove Programs**.
2. Select **HP Operations Smart Plug-in for Microsoft Exchange Server - Graph Component Integration**, and then click **Change**.
3. Complete the instructions until a message appears stating that HP Performance Manager is removed.

Using .msi File

To uninstall the Graph package using the `.msi` file, perform the following steps:

1. Browse to:

   `<SPI DVD>\SPIs\x64` or `x86\EX SPI OVPM ConfigurationPackage\HPOvSpiExGc.msi`

2. Right-click `HPOvSpiExGc.msi`, and click **Uninstall**.
3. Confirm the removal of the graphing package by clicking **Yes**.

A List of Microsoft Exchange SPI Instrumentation Files

Appendix A provides instrumentation category details of the Microsoft Exchange SPI in the following tables.

Exchange2k7_Collector

Table 12 Instrumentation Category Details

Category	Description
HP.OV.SPI.ExCollectorServer.exe	Daemon which runs on the node and starts the powershell script (exspi2007.ps1) for each collection.
HP.OV.SPI.ExCollectorServer.exe.config	Configuration file for HP.OV.SPI.ExCollectorServer.exe
HP.OV.SPI.EXCustomCmdlets.dll	Defines the Microsoft Exchange SPI custom cmdlets
exspi2007.ps1	PowerShell script which formulates and executes the Microsoft Exchange cmdlets and logs data or sends alerts, or does both.

Exchange 2k7_Core

Table 13 Instrumentation Category Details

Category	Description
HP.OV.SPI.ExspiTraceUtil.exe	Sets the trace levels for the scheduler and the collector server.
HP.OV.SPI.ExScheduler.exe	Requests the collector server to launch a collection with the required parameters.
HP.OV.SPI.ExScheduler.exe.config	Configuration file for HP.OV.SPI.ExScheduler.exe
HP.OV.SPI.Terminator.exe	Stops the collector server
HP.OV.SPI.ExBPAScheduler.exe	Calls the ExBPA (Exchange Best Practices Analyzer) command line utility
CheckServiceState.exe	Returns the state of a particular service
exspidatasource.exe	Creates the datasource for Microsoft Exchange SPI and sets certain registry entries which are utilized by the collector server.

Category	Description
EX2007_AVAILABILITY.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass Ex2007_AVAILABILITY
ex2007_senderid.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_senderid
ex2007_fdsum.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_fdsum
ex2007_isperf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_isperf
ex2007_mbsummary.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_mbsummary
ex2007_pfsummary.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_pfsummary
ex2007_mbdetail.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_mbdetail
ex2007_pfdetail.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_pfdetail
ex2007_isclient.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_isclient
ex2007_umipgway.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umipgway
ex2007_pfperf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_pfperf
ex2007_pop3perf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_pop3perf
ex2007_mbperf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_mbperf
ex2007_umhunt.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umhunt
ex2007_ummbox.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_ummbox
ex2007_imap4perf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_imap4perf
ex2007_replsumm.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_replsumm
ex2007_umpin.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umpin
ex2007_smtprecv.spec	Specifies the column names and data types for the EXSPI dataclass ex2007_smtprecv
ex2007_umsrv.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umsrv

Category	Description
ex2007_qinfo.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_qinfo
ex2007_smtpsend.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_smtpsend
ex2007_agcfg.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_agcfg
ex2007_umplcy.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umplcy
EX2007_DEST.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EX2007_DEST
EX2007_RECP.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EX2007_RECP
EX2007_SENDER.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EX2007_SENDER
EX2007_SOURCE.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EX2007_SOURCE
ex2007_transq.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_transq
ex2007_umautoattendent.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umautoattendent
ex2007_umavailability.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umavailability
ex2007_umcallanswer.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umcallanswer
ex2007_umfax.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umfax
ex2007_umgeneral.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umgeneral
ex2007_umsubaccess.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_umsubaccess
ex2007_blockedmails.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_blockedmails
ex2007_blockedrcpts.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_blockedrcpts
ex2007_spamstats.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass ex2007_spamstats
ex2007_MailFlowLatency.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EX2007_MFLAT
CmdletCommands.xml	Lists the datatypes of the properties of all the Microsoft Exchange cmdlets used in the Microsoft Exchange SPI.

Category	Description
spimetadata.xml	Defines the various default and user-defined Microsoft Exchange SPI collections.
spi_msexch.xml	Defines the various modes under which SHS collector can run.
spi_msexch_chkexch.vbs	Checks the operating system and Microsoft Exchange server information for use by SHS collector.
spi_msexch.cmd	Calls shs_collector.pl which launches the SHS collector.
spi_msexch_runSHSCollector.cmd	Used by the self-healing client to run the SHS collector.
spi_msexch_shs_install.xml	Contains the Microsoft Exchange SPI installation folder details.
spi_msexch_shs_input.xml	Contains the input parameters for spi_msexch.cmd
register.bat	Registers HP.OV.SPI.EXCustomCmdllets.dll
Exspi_exshell.psc1	Defines the Microsoft Exchange SPI custom PS snap-in.
exbpa_wrapper.vbs	Wrapper script which calls ExBPACmd.exe
exspi_e2k7_clust_config.js	Generates the apminfo.xml file which describes the cluster instances
ovosysdetect_exspi.pl	Checks whether the Microsoft Exchange SPI is installed
license.vbs	Checks the license validity of the Microsoft Exchange SPI

Exchange 2k10_Core

Table 14 Instrumentation Category Details

Category	Description
HP.OV.SPI.ExspiTraceUtil.exe	Sets the trace levels for the scheduler and the collector server.
HP.OV.SPI.ExScheduler.exe	Requests the collector server to launch a collection with the required parameters.
HP.OV.SPI.ExScheduler.exe.config	Configuration file for HP.OV.SPI.ExScheduler.exe
HP.OV.SPI.Terminator.exe	Stops the collector server
HP.OV.SPI.ExBPAScheduler.exe	Calls the ExBPA (Exchange Best Practices Analyzer) command line utility
CheckServiceState.exe	Returns the state of a particular service
exspidatasource.exe	Creates the datasource for Microsoft Exchange SPI and sets certain registry entries which are utilized by the collector server.

Category	Description
EXSPI_AVAILABILITY.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EXSPI_AVAILABILITY
exspi_attachfilter.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_attachfilter
exspi_connfilter.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_connfilter
exspi_contfilter.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_contfilter
exspi_hubtransdsn.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_hubtransdsn
exspi_recpfilter.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_recpfilter
exspi_senderid.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_senderid
exspi_sendfilter.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_sendfilter
exspi_prtagt.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_prtagt
exspi_fdsoab.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_fdsoab
exspi_fdsum.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_fdsum
exspi_isperf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_isperf
exspi_mbsummary.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_mbsummary
exspi_pfsummary.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_pfsummary
exspi_mbdetail.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_mbdetail
exspi_pfdetail.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_pfdetail
exspi_isclient.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_isclient
exspi_umipgway.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umipgway
exspi_pfperf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_pfperf
exspi_pop3perf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_pop3perf

Category	Description
exspi_mbperf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_mbperf
exspi_umhunt.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umhunt
exspi_ummbox.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_ummbox
exspi_imap4perf.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_imap4perf
exspi_replsumm.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_replsumm
exspi_umpin.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umpin
exspi_smtprecv.spec	Specifies the column names and data types for the EXSPI dataclass exspi_smtprecv
exspi_umsrv.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umsrv
exspi_qinfo.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_qinfo
exspi_smtpsend.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_smtpsend
exspi_agcfg.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_agcfg
exspi_umplcy.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umplcy
EXSPI_DEST.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EXSPI_DEST
EXSPI_RECP.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EXSPI_RECP
EXSPI_SENDER.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EXSPI_SENDER
EXSPI_SOURCE.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EXSPI_SOURCE
exspi_transq.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_transq
exspi_umautoattendent.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umautoattendent
exspi_umavailability.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umavailability
exspi_umcallanswer.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umcallanswer

Category	Description
exspi_umfax.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umfax
exspi_umgeneral.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umgeneral
exspi_umsubaccess.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_umsubaccess
exspi_blockedmails.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_blockedmails
exspi_blockedrcpts.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_blockedrcpts
exspi_spamstats.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass exspi_spamstats
exspi_MailFlowLatency.spec	Specifies the column names and data types for the Microsoft Exchange SPI dataclass EXSPI_MFLAT
CmdletCommands.xml	Lists the datatypes of the properties of all the Microsoft Exchange cmdlets used in the Microsoft Exchange SPI.
spimetadata.xml	Defines the various default and user-defined Microsoft Exchange SPI collections.
spi_msexch.xml	Defines the various modes under which SHS collector can run.
spi_msexch_chkexch.vbs	Checks the operating system and Microsoft Exchange server information for use by SHS collector.
spi_msexch.cmd	Calls shs_collector.pl which launches the SHS collector.
spi_msexch_runSHSCollector.cmd	Used by the self-healing client to run the SHS collector.
spi_msexch_shs_install.xml	Contains the Microsoft Exchange SPI installation folder details.
spi_msexch_shs_input.xml	Contains the input parameters for spi_msexch.cmd
register.bat	Registers HP.OV.SPI.EXCustomCmdllets.dll
Exspi_exshell.psc1	Defines the Microsoft Exchange SPI custom PS snap-in.
exbpa_wrapper.vbs	Wrapper script which calls ExBPACmd.exe
exspi_e2k7_clust_config.js	Generates the apminfo.xml file which describes the cluster instances
ovosysdetect_exspi.pl	Checks whether the Microsoft Exchange SPI is installed
license.vbs	Checks the license validity of the Microsoft Exchange SPI

Exchange2k7_Discovery and Exchange2k10_Discovery

Table 15 Instrumentation Category Details

Category	Description
interop.opcautolib.dll	dll used in the Microsoft Exchange SPI discovery
Exchange_Discovery.exe.config	Configuration file for Exchange_Discovery.exe
discoverresult.dll	Used by Exchange_Discovery.exe to create the Microsoft Exchange SPI service discovery tree.
Exchange_Discovery.exe	Discovers the Microsoft Exchange topology and services.
msexchange.apm.xml	Contains the list of the Microsoft Exchange SPI policies that are to be disabled on a passive cluster node
ex2k7_rundiscovery.js	Runs the Microsoft Exchange SPI discovery policy (Exchange 2007 Discovery) on a cluster node after a cluster failover happens.

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