

HP Operations Smart Plug-in for HP Storage Essentials SRM

for HP Operations Manager for UNIX®

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Installation and Reference Guide

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Contents

1	HP Storage Essentials SRM Overview	9
	Key Features and Benefits of HP Storage Essentials SRM	9
	HP Storage Essentials SRM SPI Overview	12
	Features and Functionality of the HP Storage Essentials SRM SPI	13
2	Installing the HP Storage Essentials SRM SPI	15
	Prerequisites	15
	Hardware Requirements	15
	Disk Space Requirements	15
	Software Requirements	17
	HPOM Management Server Versions	17
	HP Systems Insight Manager CMS Versions	18
	HP Storage Essentials CMS Versions	18
	19
	19
	CIM Extension and HPOM Agent Versions	19
	Installing the HP Storage Essentials SRM SPI	20
	Installing on the HP-UX System	20
	Using the swinstall Command	20
	Using the swinstall GUI on HP-UX	21
	Installation on a Solaris System	22
	Using the pkgadd Command specifying the instance	22
	Using the pkgadd Command to select the instance from the menu	23
	Verifying Installation	24
	Verifying Instalaltion on HP-UX System	24
	Verifying Installation on a Solaris System	24
	Installed File Locations	27

3	Configuring the HP Storage Essentials SRM SPI	29
	Task 1: Install the HP Operations Agent	29
	Task 2: Assign HP Storage Essentials SRM User Responsibilities	30
	Task 3: Add Nodes to the HP Storage Essentials SRM Node Groups	34
	Adding a Managed Node to the HP Storage Essentials SRM CIM Extn Node Group	34
	Adding a Managed Node to the HP Storage Essentials SRM CMS Node Group	35
	Task 4: Deploy Commands on the HP Storage Essentials SRM CMS or CIM Extension Nodes	37
	Task 5: Deploy Templates on the HP Storage Essentials SRM Nodes	39
	Task 6: Configure the HP Operations Agent for a Non-root User	41
	Providing Access to Storage Essentials SRM SPI Applications	41
	Task 7: Obtain HP Storage Essentials SRM CMS credentials	43
	Task 8: Import HP SE SRM Infrastructure	46
	Task 9: Set Up Service Discovery	48
4	Using the HP Storage Essentials SRM SPI	51
	Using the HP Storage Essentials SRM SPI Node Groups	51
	Using HP Storage Essentials SRM SPI Applications	52
	Using the AppStorManager Application Group	53
	Using the CIM Extension Application Group	55
	Using the HPSESRMSPI Utils Application Group	58
	Using the HP Storage Essentials SRM SPI Template Groups	60
	Using HP Storage Essentials SRM SPI Message Groups	63
	Using the HP Storage Essentials SRM SPI Service View	65
	Applying the HP Storage Essentials SRM SPI Services to Non-default Users	68
	Viewing Services	68
	Reconfiguring HP SIM CMS Credentials for the HP Storage Essentials SRM SPI	69
5	Uninstalling the HP Storage Essentials SRM SPI	71
	Removing HP Storage Essentials SRM SPI Templates from the HPOM Managed Nodes	71
	Removing the HP Storage Essentials SRM SPI from the Managed Nodes	74
	Removing Nodes from a Node Group	74
	Removing Storage Essentials SRM SPI Templates from the HPOM Management Server Node	75

Removing the HP Storage Essentials SRM SPI from the HPOM Management Server	77
Uninstalling on a HP-UX System	77
Uninstalling on a Solaris System	77
6 Troubleshooting	79
Error Messages and Solutions	80
No Storage Essentials service monitoring events arrive on the HPOM message browser	80
HP Storage Essentials SRM services are not visible on the HPOM console	80
Operator-initiated action on the HPOM message browser is disabled, preventing the execution of remote actions on DCE nodes	82
A Applications	85
Tracing On-Unix and Tracing Off-Unix	85
HP Storage Essentials SRM Application Group	86
AppStorManager Application Groups	87
CIM Extension Application Groups	88
HPSESRMSPI Utils Application Group	89
B Templates	91
C Service Discovery File Locations	93
HPOM Management Server	93
HPOM Managed Nodes for HTTPS Agents	94
HPOM Managed Nodes for DCE Agents	96
Index	99

1 HP Storage Essentials SRM Overview

HP Storage Essentials SRM is a family of open standards-built storage area network management and storage resource management solutions that enable you to visualize, monitor, report on, provision, and manage your heterogeneous storage environment with simplicity and speed.

The HP Storage Essentials SRM suite integrates with HP Systems Insight Manager (HP SIM) to provide advanced server and storage management capabilities. It features a base management console and an expanding portfolio of value added plug-ins. HP Storage Essentials SRM is accessed through HP SIM menu items that are labeled HP Storage Essentials SRM.

Key Features and Benefits of HP Storage Essentials SRM

- **Visualization**

Discovers automatically and maps the storage network (DAS, SAN, NAS) and backup topology by displaying the objects, path, and zones between the application and the LUN on which the corresponding data resides.

- **Zoning and provisioning**

Enables end-to-end zoning and provisioning tasks at the host, switch, and disk subsystem layers. Provides a common interface for a multi-vendor storage environment.

- **Utilization management**

Monitors availability and utilization at hosts, switches, and arrays. Provides graphical trending and forecasting. Soft Quota management enables proactive monitoring of consumption levels. File system management provides file-level scanning, analysis, reporting, and policy-based management capabilities.

- **Performance management**

Monitors performance from application objects down to storage subsystems. Monitors applications, hosts, HBAs, switches, and disk subsystems. Enables quick detection of bottlenecks that cause performance problems.

- **Chargeback**

Supports customizable chargeback values, depreciation formulas, asset-based and storage-based chargeback models, and business unit groupings. Reports enable administrators to associate costs with the quality and quantity of storage used by different business units.

- **NAS management**

Analyzes the impact of configuration changes and file sharing activities.

- **Backup management**

Offers a single view of backup activities. Identifies unprotected applications, servers, and files. Enables root cause analysis of backup failure. Increases utilization of backup resources.

- **Standards-based architecture**

Designs solution on the Storage Management Initiative Specification (SMI-S), the storage industry standard for heterogeneous storage network management based on the Common Information Model (CIM) and Web-Based Enterprise Management (WBEM). Enables support for multi-vendor storage infrastructures and ensures that investments are protected.

CIM is a common data model of an implementation-neutral schema for describing overall management information in a network/enterprise environment. CIM consists of a specification and a schema. The specification defines the details for integration with other management models such as Simple Network Management Protocols (SNMPs), Management Information Base (MIBs), and the Distributed Management Task Force's (DMTFs) Maker Interchange Formats (MIFs). The schema provides the actual model descriptions.

- **Customizable reports**

Generates an extensive set of out-of-the-box reports that satisfy requirements related to capacity management, planning, performance management, asset management, and chargeback. Reports can be customized and scheduled for automatic email distribution. Supports a wide variety of reporting formats, including HTML, XML, Microsoft Excel, and PDF.

You can find more information on the features of HP Storage Essentials SRM and other HP management products at the following HP web sites:

<http://www.managementsoftware.hp.com/>

<http://www.hp.com/go/storageessentials>

HP Storage Essentials SRM SPI Overview

The HP Operations Smart Plug-in for Storage Essentials (the HP Storage Essentials SRM SPI) integrates HP Storage Essentials SRM with HP Operations Manager (HPOM). The HPOM management scope for the HP Storage Essentials SRM SPI includes systems managed by HP Storage Essentials SRM installed in an environment consisting of HPOM and one or more HPOM-managed nodes.

The HP Storage Essentials SRM SPI is used to monitor the HP Storage Essentials SRM services. The HP Storage Essentials SRM SPI, along with the HP Operations Manager Integration for HP Systems Insight Manager (the HP SIM Integration), integrates HP Storage Essentials SRM with HPOM by forwarding storage events through the HP SIM Integration.

The HP SIM Integration, together with the HP Storage Essentials SRM SPI, allows the storage network to be monitored and managed from the HPOM management server console.

The HP Storage Essentials SRM SPI enables HPOM administrators to troubleshoot problems in the storage network before they become serious enough to affect tools and, ultimately, the end-users. Storage events are stored in the HP database. The HPOM intelligent agents are configured on the HP SIM Central Management Server (CMS), the HP Storage Essentials SRM CMS, and managed servers that are managed nodes in the HPOM management domain. The CMS runs the HP Storage Essentials SRM AppStorManager service and initiates all management operations within the management domain.

Features and Functionality of the HP Storage Essentials SRM SPI

- **Service discovery**

Discovers the HP Storage Essentials SRM CMS and HP Storage Essentials SRM-managed hosts CIM Extension services.
- **Service and process monitoring**

Monitors the availability of the HP Storage Essentials SRM CMS and Storage Essentials CIM Extension. Any service alerts can be communicated to the HPOM service map and the HPOM active message browser. This enables administrators to perform root-cause analysis of the inherent HP Storage Essentials SRM services.
- **Template groups**

Contains templates for monitoring the Storage Essentials AppStorManager process and Storage Essentials CIM Extension process.
- **Application groups**

Contains applications to start, stop, and view the status of the Storage Essentials AppStorManager process and the Storage Essentials CIM Extension process.

2 Installing the HP Storage Essentials SRM SPI

Prerequisites

To avoid problems during the installation of the HP Storage Essentials SRM SPI software, you should read this section and the documents named in this section before you start the installation process.

Hardware Requirements

The following documents explain all the hardware requirements:

- For the HPOM 8.x management server:
HP Operations Manager for Unix Installation Guide
- For HPOM 8.x HTTPS managed nodes:
HP Operations Manager HTTPS Agent Concepts and Configuration Guide
- For HPOM 8.x DCE managed nodes:
HP Operations Manager OM DCE Agent Concepts and Configuration Guide

Disk Space Requirements

Table 1 Disk space requirements

System	Operating System	Installation	Runtime Files	Total
HPOM management server (includes documentation)	HP-UX 11.00, HP-UX 11.11, HP-UX 11.23 PA, HP-UX 11. 23 IA HP-UX 11. 31 IA Solaris8,9,and10	4 MB	1 MB	5 MB
HPOM managed node	HP-UX 11.00 HP-UX 11.11 HP-UX 11.31 PA HP-UX 11.23 IA HP-UX PA Solaris 8, 9,10 RedHat Linux Advanced Server 4.0 (32-bit) RedHat Linux Advanced Server 5.0 (32-bit) SuSE Linux Enterprise Server 8 (32-bit) SuSE Linux Enterprise Server 9 (32-bit and 64-bit) AIX 5.1, 5.2 and 5.3 Tru64 5.1B	1MB	1 MB	2 MB
	Microsoft Windows 2003(32-bit and 64-bit) Microsoft Windows 2003 R2 (32-bit & 64-bit) Microsoft Windows 2008 EE (32-bit)	1 MB	1 MB	2 MB

- ▶ No additional memory (RAM) is required either on the HPOM management server or on the managed nodes for Storage Essentials SRM SPI

Software Requirements

- HP Operations Manager for HP-UX or Solaris, Version A.07.2x or A.08.2x
- HP Systems Insight Manager 5.1 and 5.2
- HP Storage Essentials SRM 6.0, 5.1 or 5.1.1 (Linux)
- HP SIM Integration, Version 01.60.027

For more information on installing the HP SIM Integration, see the *HP Operations Manager Integration for HP Systems Insight Manager Administrator's Reference for HP Operations Manager for UNIX*.

- Service Discovery Component for HP Operations Manager SPIs, Version A.02.10
- HP Operations Manager Smart Plug-in Self-Healing Information Collector, Version A.02.20.000

- ▶ The HPOM management server must be installed before you install the HP Storage Essentials SRM SPI. However, it is not necessary to stop the HPOM sessions before installing the SPI.

HPOM Management Server Versions

Table 2 Versions of HPOM management server

HPOM Management Server	Operating System	HPOM Agent Types
HPOM for Unix A.08.2x	HP-UX 11.11 HP-UX 11.23 IA/PA HP-UX 11.31 IA/PA Solaris 9 Solaris 10	HTTPS DCE

HP Systems Insight Manager CMS Versions

Table 3 Versions of HP System Insight Manager

HP Systems Insight Manager CMS	Operating System
HPSIM 5.1 HPSIM 5.2	<ul style="list-style-type: none"> • Windows 2003 (32-bit) • Windows 2003 R2 (32-bit) • RedHat Linux AS 4 (32-bit) • RedHat Linux AS 5 (64-bit) • SuSE Linux ES 9 (32-bit) • SuSE Linux ES 10 (32-bit)

HP Storage Essentials CMS Versions

Table 4 Versions of HP Storage Essentials CMS

HP Storage Essentials SRM	Operating System
HP Storage Essentials 6.0, SP1, SP2 HP Storage Essentials 5.1 SP5 HP Storage Essentials 5.1.1 SP5	<ul style="list-style-type: none"> • Windows 2003 • Windows 2003 R2 (32-bit) • RedHat Linux EL 4.0(32-bit) • SuSE Linux ES 9 (32-bit)

CIM Extension and HPOM Agent Versions

Table 5 Versions of CIM Extension and HPOM Agent

Agent	Operating System
CIM Extension HPOM Agent	<ul style="list-style-type: none">• Windows 2003 (32-bit and 64-bit)• Windows 2003 R2(32-bit and 64-bit)• HP-UX 11.00• HP-UX 11.11• HP-UX 11.23 PA• HP-UX 11.23 IA• HP-UX 11.31 IA• HP-UX 11.31 PA• Solaris 8• Solaris 9• Solaris 10• RedHat Linux EL 3.0 (32-bit)• RedHat Linux EL 4.0 (32-bit)• RedHat Linux EL 4.0 (64-bit)• SuSE Linux ES 9 (32-bit)• SuSE Linux ES 9 (64-bit)• AIX 5L 5.1• AIX 5L 5.2• AIX 5L 5.3

Installing the HP Storage Essentials SRM SPI

Before installing HP Storage Essentials SRM SPI on the HPOM management server, make sure that the HPOM server meets the installation prerequisites discussed at the beginning of this chapter.

Installing on the HP-UX System

You can use either of the following two methods to install the HP Storage Essentials SRM SPI.

Using the swinstall Command

Follow these steps:

- 1 Log on to the HPOM management server as a root user.
- 2 Mount the DVD. For more information, see the *HP Operations Smart Plug-ins DVD Installation Guide*.
- 3 Enter the following command to install the HP Storage Essentials SRM SPI:

HP-UX:

```
/usr/sbin/swinstall -s <mount point>/HPUX/OV_DEPOT/  
11.0HPUX.depot HPSESRMSPI
```

The swinstall command installs the HP Storage Essentials SRM SPI software bundle from the depot and performs the basic configuration. The software bundle contains the HP Storage Essentials SRM SPI, configuration files, and documentation files.

- 4 Check the `/var/adm/sw/swagent.log` file for any errors.

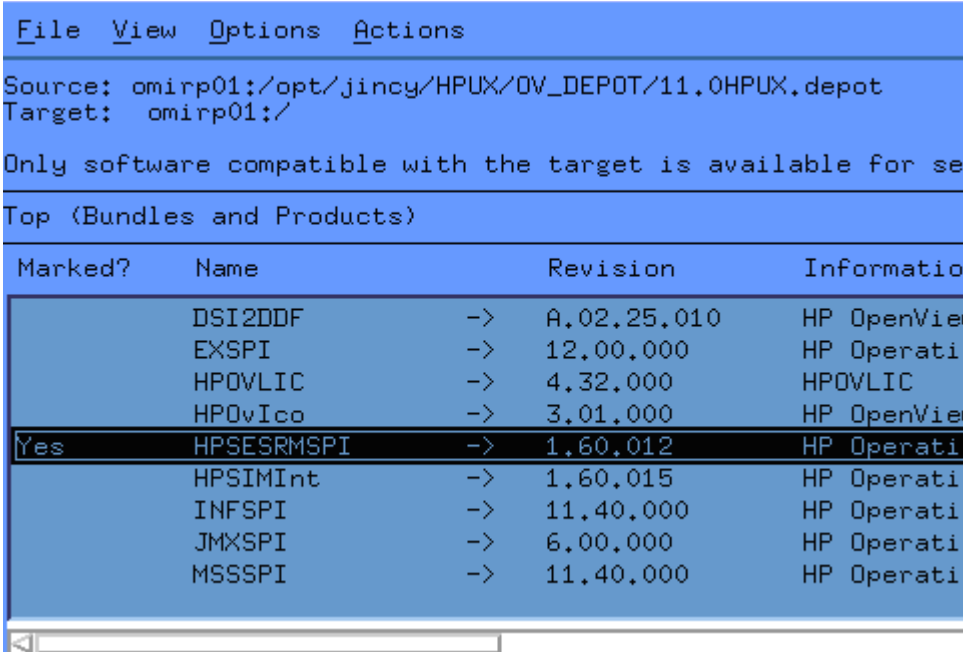
Using the swinstall GUI on HP-UX

Follow these steps:

- 1 Log on to the HPOM management server as a root user.
- 2 Mount the DVD. For more information, see the HP Operations Smart Plug-ins DVD.
- 3 Ensure that the DISPLAY environment variable is set to the appropriate node name.
- 4 Enter the following command to install the HP Storage Essentials SRM SPI, and select the Storage Essentials SRM SPI bundle:

```
/usr/sbin/swinstall -s <mount point>/HPUX/OV_DEPOT/  
11.0HPUX.depot
```

The SD Install-Software Selection window opens.



The screenshot shows a terminal window with the following content:

```
File View Options Actions  
Source: omirp01:/opt/jincy/HPUX/OV_DEPOT/11.0HPUX.depot  
Target: omirp01:/br/>Only software compatible with the target is available for se  
Top (Bundles and Products)  
Marked? Name Revision Information  
DSI2DDF -> A.02.25.010 HP OpenVie  
EXSPI -> 12.00.000 HP Operati  
HPOVLIC -> 4.32.000 HPOVLIC  
HPOvIco -> 3.01.000 HP OpenVie  
Yes HPSESRMSPI -> 1.60.012 HP Operati  
HPSIMInt -> 1.60.015 HP Operati  
INFSPI -> 11.40.000 HP Operati  
JMXSPI -> 6.00.000 HP Operati  
MSSSPI -> 11.40.000 HP Operati
```

- 5 From the SD Install-Software Selection window, select the HPSESRMSPI bundle.

- 6 From the Actions menu, select **Install**. The analysis part of the installation starts, which checks whether the system meets the installation prerequisites.
- 7 Click **Logfile** in the Install Analysis window to check for errors in the analysis phase of the installation.

You can also check the `/var/adm/sw/swagent.log` log file and correct any errors that appear.

▶ If the analysis fails, follow the recommendations discussed in the log file `/var/adm/sw/swagent.log` and re-execute the analysis.

- 8 After you complete the installation analysis without errors, click **OK** in the Install Analysis window to install the selected software after the analysis phase is completed without error. The message “Status=Complete” is displayed when the analysis phase is completed successfully.
- 9 Click **Logfile** in the Install Analysis window to verify that the installation phase is completed without errors. You can also check the `/var/adm/sw/swagent.log` file and correct any errors that appear.
- 10 Click **Done** in the Install window, to complete the installation of the software.

▶ For more information about installing HP Operations Smart Plug-ins, see the *HP Operations Smart Plug-ins DVD Installation Guide*.

Installation on a Solaris System

You can use either of the following two methods to install the HP Storage Essentials SRM SPI.

Using the `pkgadd` Command specifying the instance

Follow these steps:

- 1 Log on to the HPOM management server as a root user.

- 2 Mount the DVD. For more information, see the *HP Operations Smart Plug-ins DVD Installation Guide*.
- 3 Enter the following command to install the HP Storage Essentials SRM SPI:

```
/usr/sbin/pkgadd -d <mount point>/SOLARIS/OV_DEPOT/  
HPOMSpiDVD-8.1.sparc HPOvSPiSesrm
```

The `pkgadd` command installs the HP Storage Essentials SRM SPI software from the `sparc` file and performs the basic configuration. The `sparc` file contains the HP Storage Essentials SRM SPI, configuration files, and documentation files.

Using the `pkgadd` Command to select the instance from the menu

Follow these steps:

- 1 Log on to the HPOM management server as a root user.
- 2 Mount the DVD. For more information, see the *HP Operations Smart Plug-ins DVD Installation Guide*.
- 3 Ensure that the `DISPLAY` environment variable is set to the appropriate node name.
- 4 Enter the following command to install HP SIM Integration by selecting the HP SIM Integration instance

```
/usr/sbin/pkgadd -d <mount point>/SOLARIS/OV_DEPOT/  
HPOMSpiDVD-8.1.sparc
```

The instances get listed in a menu.

- 5 From the menu list, select the **HPOvSpiSesrm** instance and complete the installation

Verifying Installation

Verifying Instalation on HP-UX System

Follow these steps:

- 1 On the command line, run the following command:

```
/usr/sbin/swlist HPSESRMSPI
```

The command returns:

HPSESRMSPI	01.60.021	HP Operations Smart Plug-in for HP Storage Essentials SRM
------------	-----------	---

- HPSESRMSPI contains the necessary files to run the HP Storage Essentials SRM SPI for HP-UX and Solaris (configuration, executables, and scripts).

Verifying Installation on a Solaris System

At the command prompt, enter the following command.

```
/usr/sbin/pkginfo HPOvSpiSesrm
```

The command returns:

Application	HPOvSpiSes rm	HP Operations SPI for HP Storage Essentials SRM
-------------	------------------	--

Table 8 List of elements

Window	Element
Node Groups	HP SE SRM CMS-Win HP SE SRM CMS-Unix HP SE SRM CIM Extn-Win HP SE SRM CIM Extn-Unix
Application Group	HP Storage Essentials SRM
Message Source Templates	HP Storage Essentials SRM
Message Group	HPSESRMSPI-StorageEssentials_SRM
User	hpsermspi_op
User Profile	HP Storage Essentials SRM SPI Admin

- 2 On the HPOM management server, check the following assignment of template groups to the Storage Essentials SRM SPI node groups. If any of the assignments are missing, you must manually assign the node groups to the template groups from **Action > Agents > Assign Templates**.

Table 9 List of template groups assigned to node groups

Node Groups	Template Groups
CIM Extn-Unix	CIM Extension-Unix
CIM Extn-Win	CIM Extension-Win
CMS-Unix	CMS-Unix
CMS-Win	CMS-Win

- 3 Check the following log files for more information on installation problems on HPUX:

```

/var/adm/sw/swagent.log
/var/adm/sw/swinstall.log

```

- 4 Check the following log file for more information on HPSESRMSPI configuration problems:

```
/var/opt/OV/log/SPIInstallLogs/HPSESRMSPI_Install.log
```

Installed File Locations

The installation process creates the following files and directories.

Table 10 List of directories where the installed files are located

Component	Location
Binaries	/opt/OV/bin/HPSESPI
HPOM Server Configuration	/var/opt/OV/share/tmp/OpC_appl/ HPSESRMSPI
Icon Files for Applications	/etc/opt/OV/share/bitmaps/C/software
Service Discovery Configuration File for Unix	/var/opt/OV/conf/SPISvcDisc/ HPSESPI-Unix_DiscConf.sh
Service Discovery Configuration File for Windows	/var/opt/OV/conf/SPISvcDisc/ HPSESPI-Win_DiscConf.sh
Application Icon Registration File	/etc/opt/OV/share/symbols/C/Software/ Software_HPSESPI

The following directories are deployed to the DCE managed nodes.

Table 11 List of directories deployed to the DCE managed nodes

Operating System	Installed Location
HP-UX, Solaris, Linux, Tru-64	/var/opt/OV/bin/OpC/cmds
Microsoft Windows	\usr\OV\bin\OpC\cmds
AIX	/var/lpp/OV/OpC/cmds

The following directories for HP Storage Essentials SRM SPI components are deployed to the HTTPS managed nodes.

Table 12 List of directories deployed to the HTTPS managed nodes

Operating System	Installed Location
HP-UX, Solaris, Linux, AIX	/var/opt/OV/bin/instrumentation
Microsoft Windows	%OvInstallDir%\data\bin\instrumentation
Tru-64	/usr/var/opt/OV/bin/instrumentation



The HP Storage Essentials SRM SPI command scripts are copied to these paths when the HP Storage Essentials SRM commands are deployed to the managed nodes.

3 Configuring the HP Storage Essentials SRM SPI

Configuring the HP Storage Essentials SRM SPI consists of the following tasks.

Task 1: Install the HP Operations Agent

Before configuring the Storage Essentials SRM SPI you must make sure that the HP Operations agent is installed on the Storage Essentials nodes. For more information about the various installation methods, see the *HP Operations Manager for Unix Installation Guide*.

Before installing the HP Operations agent, make sure that the system on which you want to install the HP Operations agent meets the installation prerequisites. You can find this information in [Chapter 2, Installing the HP Storage Essentials SRM SPI](#).

You can install the HP Operations agent by using the following methods on an HPOM managed node:

- Standard installation
- Manual installation

Task 2: Assign HP Storage Essentials SRM User Responsibilities

With HPOM, user responsibilities can be assigned by means of user profiles, or by individually assigning responsibilities by modifying the user definition. The installation of the HP Storage Essentials SRM SPI adds the user profile HP Storage Essentials SRM SPI Admin in the User Profile Bank and adds the user hpesrmspi_op to the User Bank.

To work with the HP Storage Essentials SRM SPI, you must either log on as the hpesrmspi_op user, *or* assign the HP Storage Essentials SRM SPI Admin profile to the user you are logged in as, *or* modify your user to give authorization for the HP Storage Essentials SRM SPI applications and assign responsibilities for the HP Storage Essentials SRM SPI message groups.

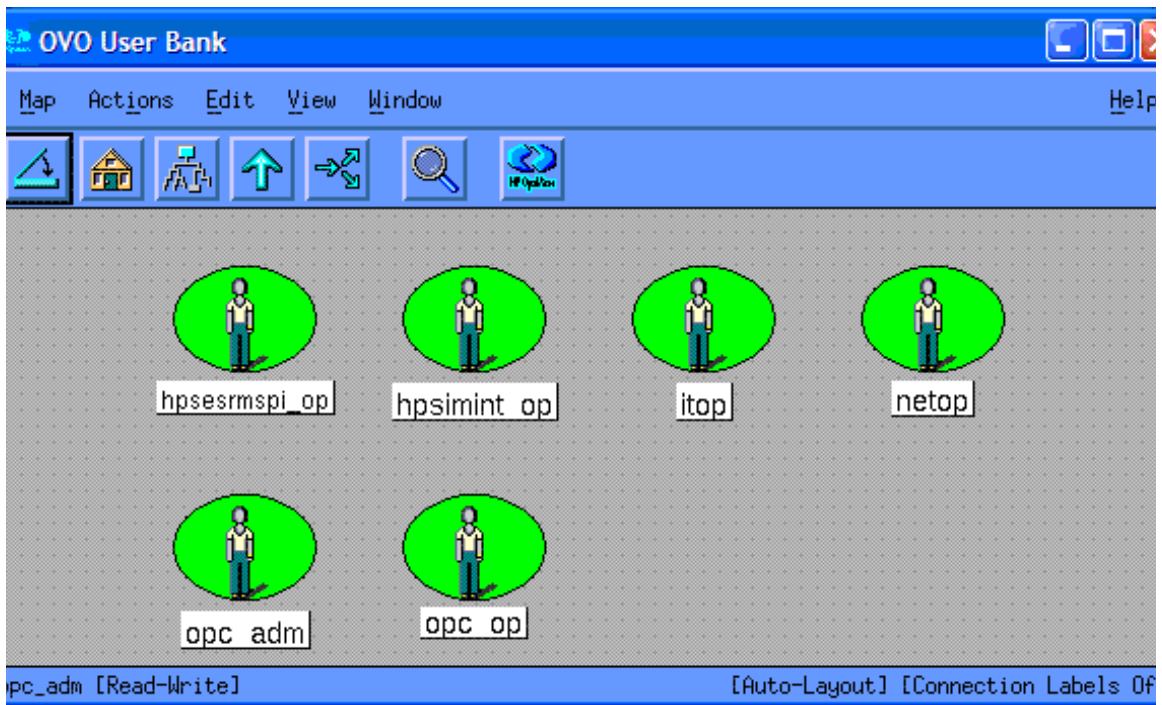
The HPOM administrator can use the user roles to simplify the process of assigning responsibilities to HPOM users. The users associated with the HP Storage Essentials SRM SPI Admin role can access all the HP Storage Essentials SRM SPI tools, templates, and HPSESRMSPI-StorageEssentials_SRM message groups assigned to them. They can also manage and control the Storage Essentials CMS and CIM Extension nodes.

The HP Storage Essentials SRM SPI Admin user template authorizes a user for the following functions:

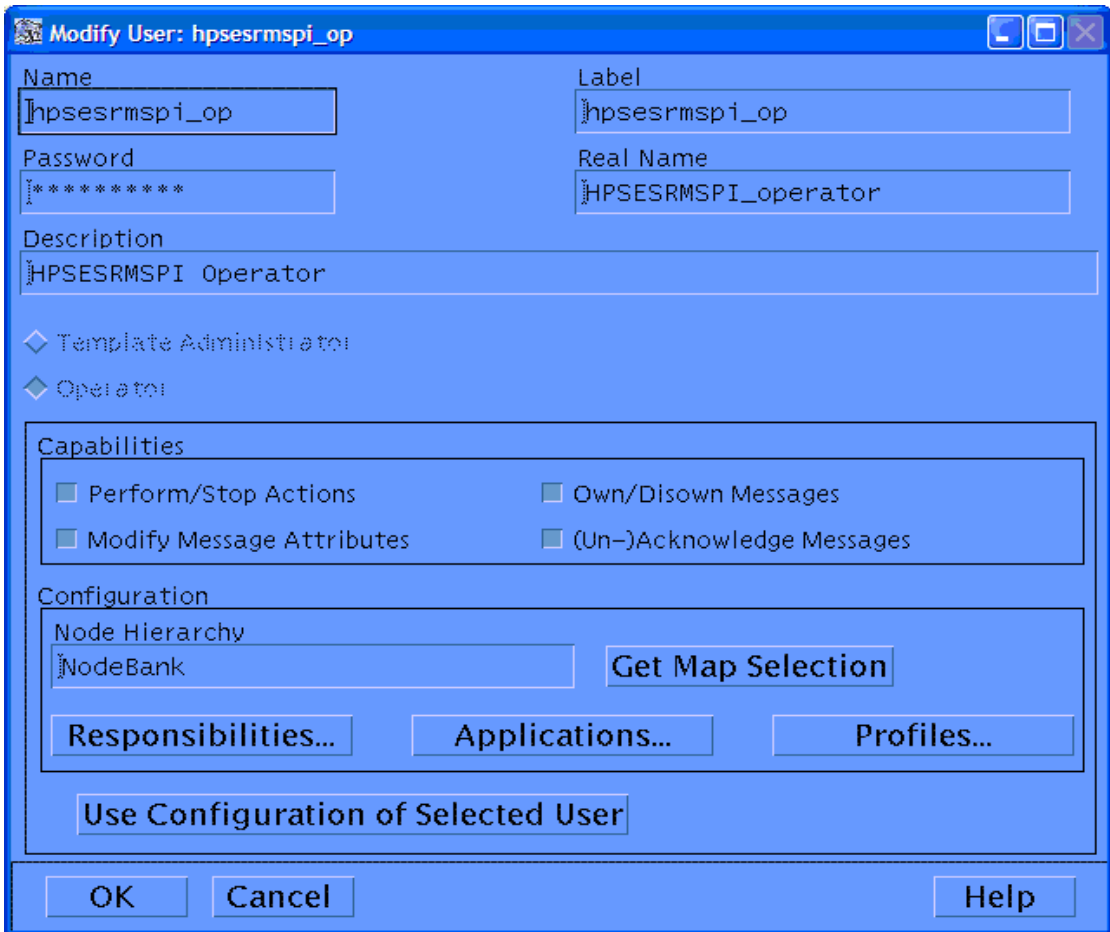
- Message browsing of the HPSESRMSPI-StorageEssentials_SRM message group
- Execution rights to any application in the HP Storage Essentials SRM application group

To assign the profile to an HPOM user, follow these steps:

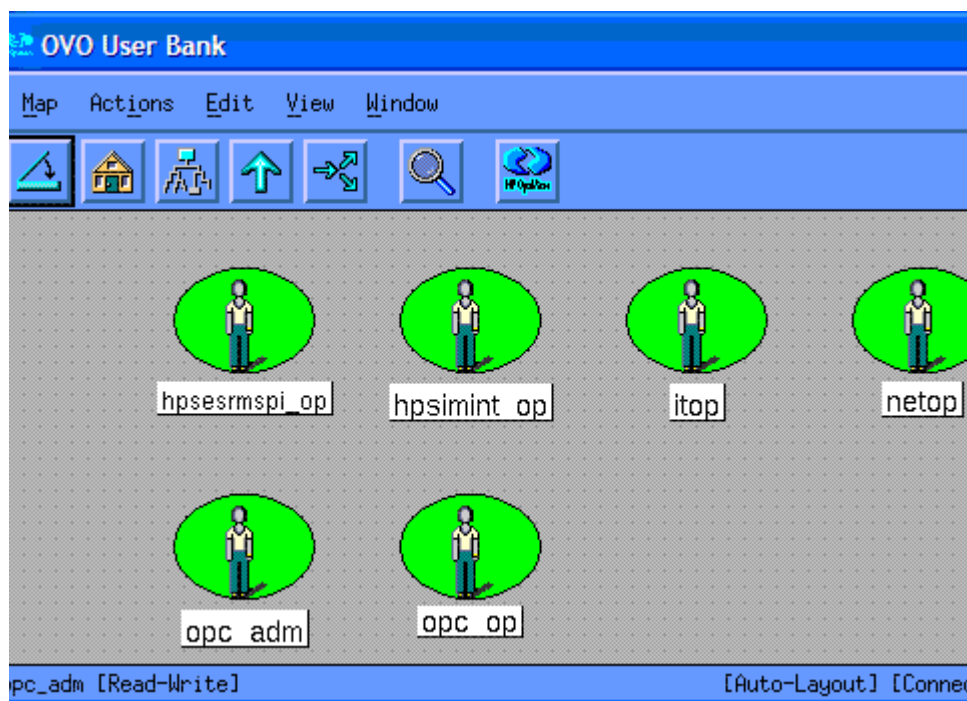
- 1 Open the OM User Bank and the OM User Profile Bank. The OM User Bank window opens.



- 2 Right-click user, and select **Modify**. The Modify User window opens.



- 3 Click **Profiles**. The Profiles of User window opens.
- 4 Drag and drop the **HP Storage Essentials SRM SPI Admin** from the OM User Profile Bank to the Profiles of User window.



5 Click **OK** in the Modify User window.



For more information on assigning user responsibilities, see the *HP Operations Manager for Unix Concepts Guide*.

Task 3: Add Nodes to the HP Storage Essentials SRM Node Groups

The HP Storage Essentials SRM SPI automatically creates the following node groups with appropriate template groups already assigned:

- CMS-Win
- CMS-Unix
- CIM Extension-Win
- CIM Extension-Unix



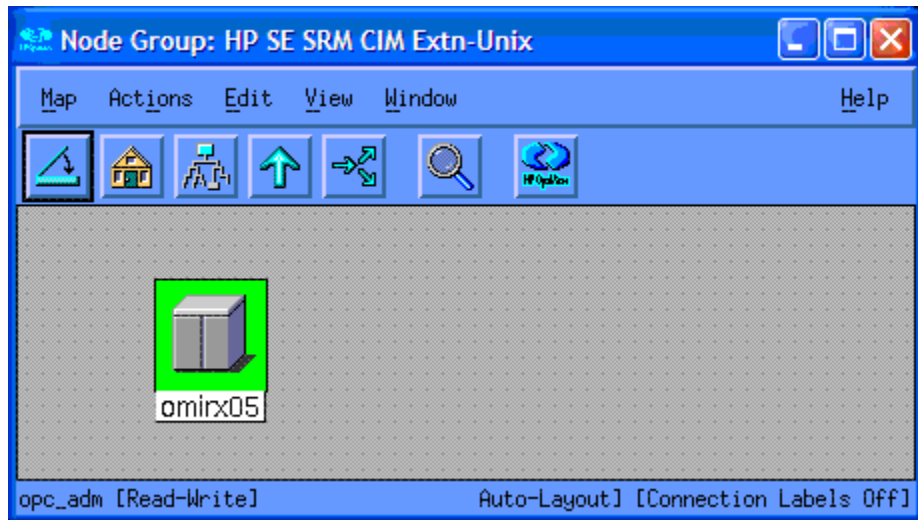
The HP Storage Essentials SRM SPI node groups are associated with respective template groups. When the nodes are added to the node groups, templates relevant to that particular node and instrumentation are automatically deployed.

Adding a Managed Node to the HP Storage Essentials SRM CIM Extn Node Group

Follow these steps:

- 1 Open the OM Node Bank window and the Node Group Bank window.
- 2 Drag a node from the Node Bank window and drop it in the **CIM Extension-Unix** or **CIM Extension-Win** (depending on your node's operating system) Node Group window. You can also open the desired CIM Extension node group, drag nodes from the Node Bank, and drop them into the desired CIM Extension Node Group window.

The following figure shows a node added to the CIM Extension-Unix node group.

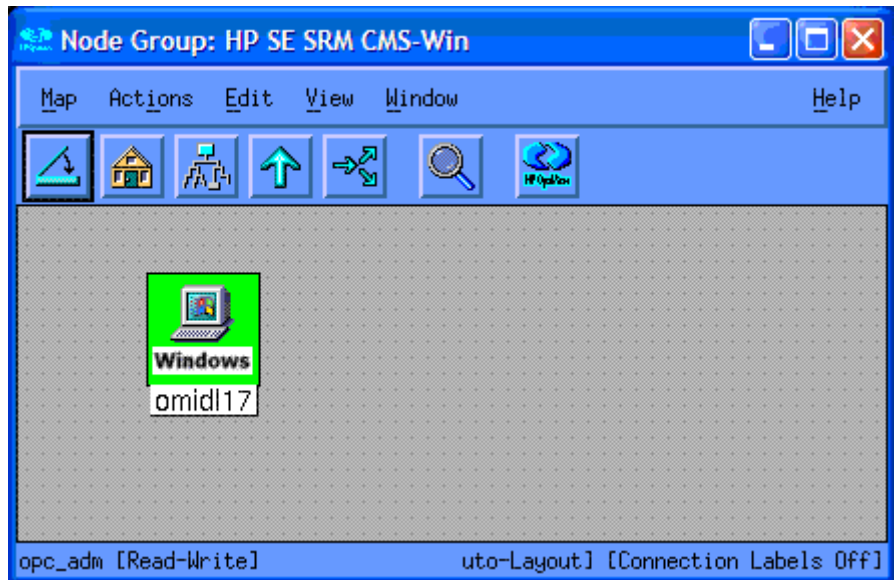


Adding a Managed Node to the HP Storage Essentials SRM CMS Node Group

Follow these steps:

- 1 Open the OM Node Bank window and the Node Group Bank window.
- 2 Drag a node from the Node Bank window and drop it in the **AppStorManager-Unix** or **AppStorManager-Win** Node Group window. You can also open the desired HP Storage Essentials SRMCMS node group, drag nodes from the Node Bank, and drop them into the desired HP Storage Essentials SRM CMS Node Group window.

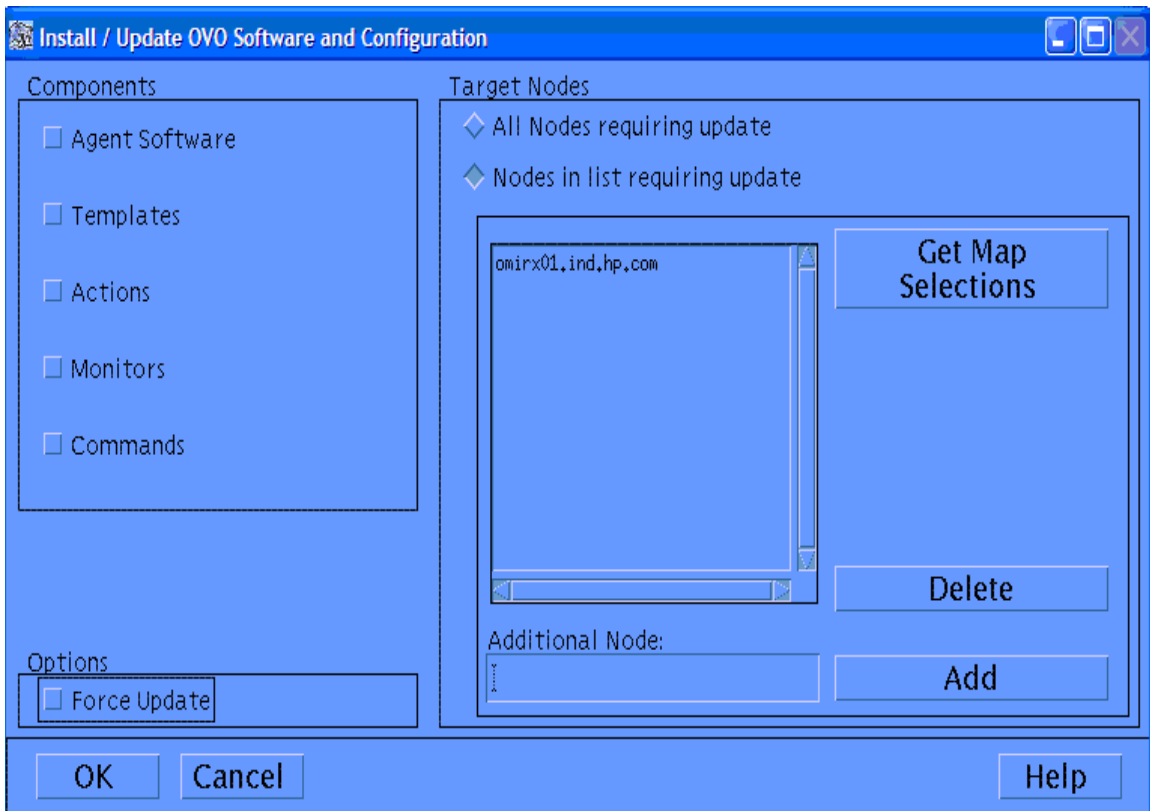
The following figure shows a node added to the AppStorManager-Win node group.



Task 4: Deploy Commands on the HP Storage Essentials SRM CMS or CIM Extension Nodes

Follow these steps:

- 1 Select the appropriate node from the Node Bank.
- 2 Select **Actions > Agents > Install / Update SW & Config**. The Install/Update OM Software and Configuration window opens.



- 3 In the Install/Update OM Software and Configuration window, select **Commands** components.
- 4 Click **OK**.

The following message is displayed in the Message Browser for each managed (HP Storage Essentials SRM CMS and CIM Extensions) node:

The following configuration information was successfully distributed: Commands

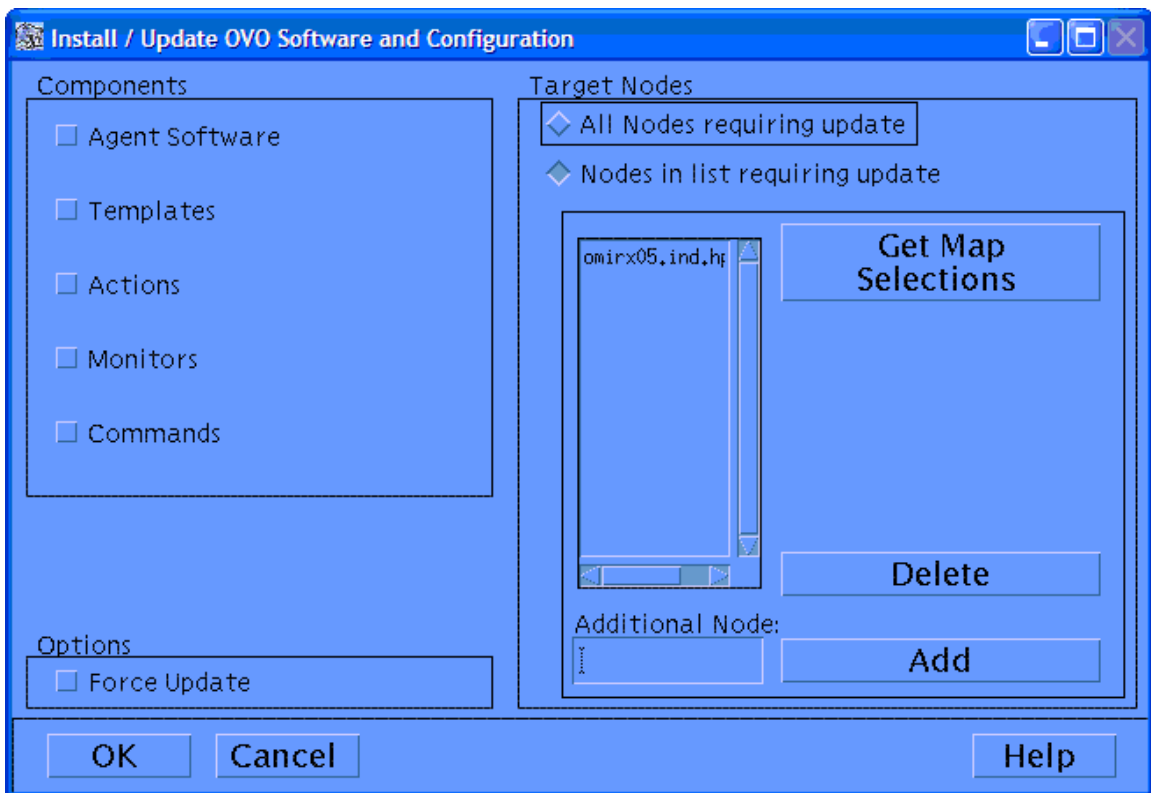
For this message to be displayed in the active message browser:

- The node must be assigned to the appropriate Storage Essentials SRM SPI node group.
- The user must have privileges for the OpC message group.

Task 5: Deploy Templates on the HP Storage Essentials SRM Nodes

Before deploying a template, make sure that the node is added to the appropriate HP Storage Essentials SRM node group and then follow these steps:

- 1 Select the node from the OM Node Bank.
- 2 Select **Actions > Agents > Install / Update SW & Config**. The Install/Update OM Software and Configuration window opens.



- 3 From the Install/Update Software and Configuration window, select **Templates**.

- 4 Select **Force Update** to ensure that the modifications are distributed.
- 5 Click **OK** to distribute the templates to the HPOM managed node.

The following message is displayed in the Message Browser for each managed (HP Storage Essentials SRM CMS and CIM Extensions) node:

```
The following configuration information was successfully
distributed:
Templates.
```

For this message to be displayed in the active message browser:

- The node must be assigned to the appropriate Storage Essentials SRM SPI node group.
- The user must have privileges for the OpC message group.

Task 6: Configure the HP Operations Agent for a Non-root User

For information on configuring the HP Operations Agent to run as an alternative user, see the *HP Operations Manager HTTPS Agent Concepts and Configuration Guide*.

To configure non-root agents for the HP Storage Essentials SRM SPI, follow these steps:

- 1 Log on to the managed node as a root user and open a terminal window.
- 2 Open the following instrumentation directory for HTTPS node:

```
cd /var/opt/OV/bin/instrumentation
```

- 3 Enter the following at the command prompt:

```
./HPSESRMSPI_perl HPSESRMSPI_root.pl .
```

This command generates the HPSESRMSPI.su file.

The following message should appear:

```
The script has completed successfully.
```

The HP Storage Essentials SRM SPI does not support a non-root HP Operations agent on AIX and Tru64 CIM Extension nodes.

Providing Access to Storage Essentials SRM SPI Applications

Follow these steps:

- 1 Log on to the managed node as a root user and open a terminal window.
- 2 Open the following file:

```
/etc/HPSESRMSPI.su
```

- 3 Edit the file by uncommenting lines or by adding the following:

```
root:$CIMEExtPath/APPQcime/tools/start
root:$CIMEExtPath/APPQcime/tools/stop
root:$CIMEExtPath/APPQcime/tools/status
root:/etc/init.d/appstormanager start
root:/etc/init.d/appstormanager stop
```



On HP-UX and Linux, the `$CIMEExtPath` is `/opt`
On Solaris, enter the following command to get the value for `$CIMEExtPath`:

```
/usr/bin/pkginfo -r APPQcime
```

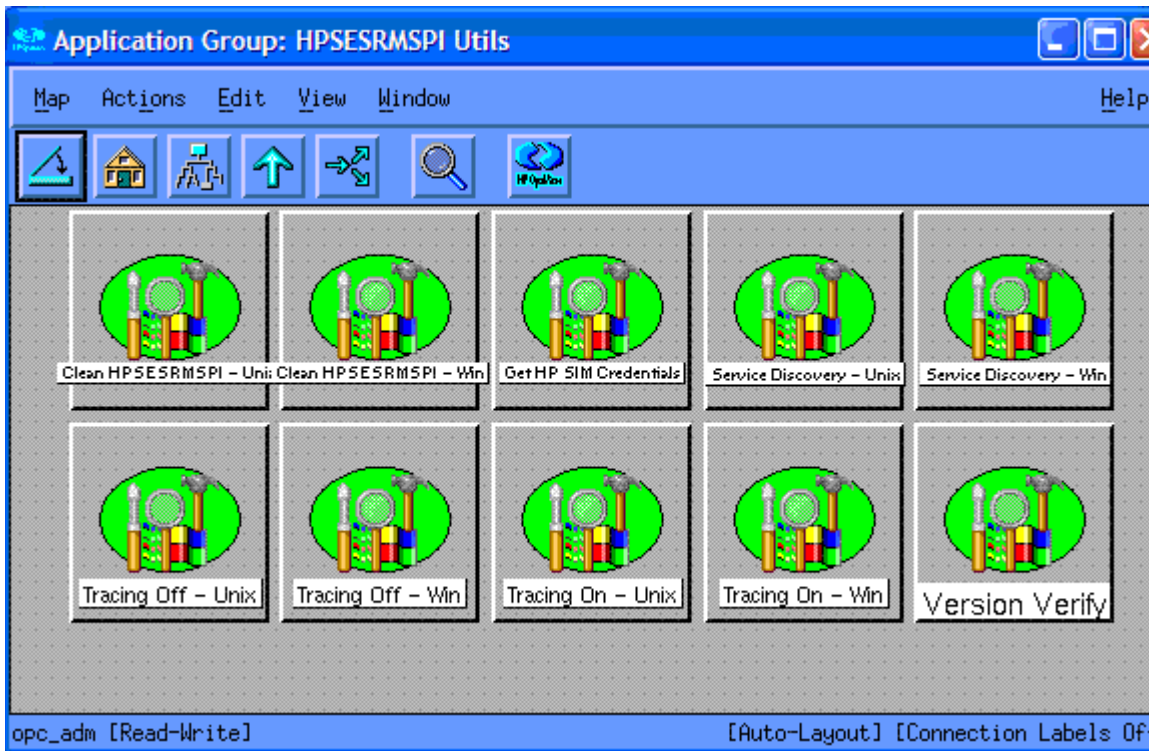
This enables non-root users to start or stop Storage Essentials services.

Task 7: Obtain HP Storage Essentials SRM CMS credentials

To activate the functionality provided with the HP Storage Essentials SRM SPI, you must first enter the HP SIM credentials for each HP Storage Essentials SRM CMS. This step is mandatory for service discovery of the Storage Essentials service hierarchy.

To obtain HP SIM credentials, follow these steps:

- 1 From the OM Application Bank window, double-click **HP Storage Essentials SRM > HPSESRMSPI Utils**. The **HPSESRMSPI Utils** Application Group window opens.



- 2 Drag the **HP Storage Essentials SRM CMS** node from the Node Bank, and drop it into the **Get HP SIM Credentials** application.
- 3 The Terminal window opens and the following message is displayed if you are on an HP Storage Essentials SRM CMS Windows node:


```

Enter the HP Systems Insight Manager DOMAIN\username:
The following message displays if you are on an HP Storage
Essentials SRM CMS Unix node:
Enter the HP Systems Insight Manager username:
      
```
- 4 At the prompt, enter the HP Systems Insight Manager user name for HP Storage Essentials SRM CMS on this node and press **Enter**. The following message is displayed:

Enter the HP Systems Insight Manager password:

- 5 At the prompt, enter the corresponding HP Systems Insight Manager password and press **Enter**. The following message is displayed:

Re-enter password:

- 6 Re-enter the password to confirm.

The application attempts to verify the user name and password. You are then prompted to Press return to exit. If the credentials entered are not accepted by Storage Essentials, the following message is displayed:

Failed to validate the HP SIM CMS credentials. Possible causes could be:

1. HP SIM CMS is not installed
2. HP SIM CMS service is not running
3. HP SIM CMS credentials incorrect

Press return to exit.

- 7 Press **Enter** to close the terminal window.



Service Discovery does not function correctly if the user name and password are incorrect. If you do not know the user name and password, contact your system administrator.

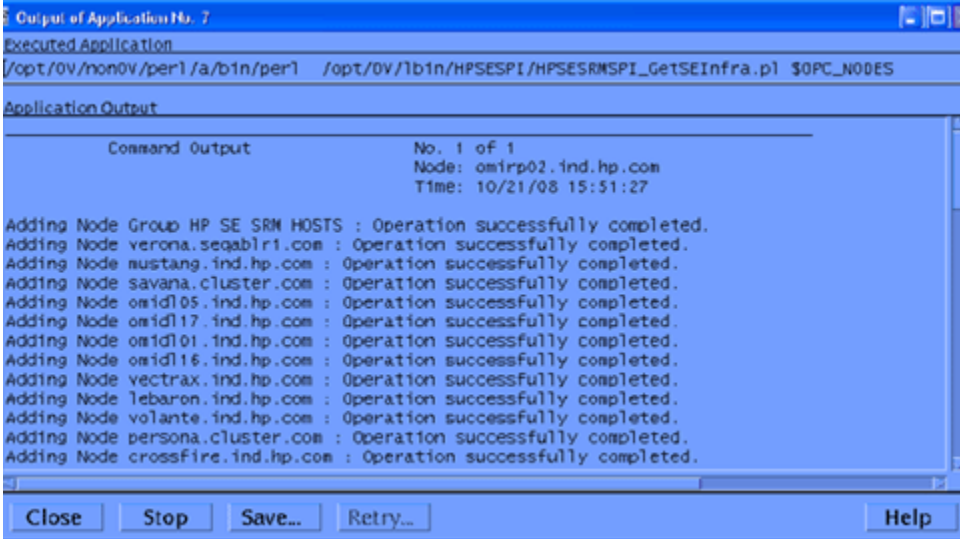


Use the same credentials you use to log into HP Systems Insight Manager. HP SIM credentials must have the role Domain_Admin in Storage Essentials CMS in order for the Storage Essentials SRM SPI to function correctly. HP SIM credentials are stored in an encrypted format on the HPOM nodes.

Task 8: Import HP SE SRM Infrastructure

To get events from the HP SE SRM devices, you must import the infrastructure for each of the HP SE SRM CMS. To import the HP SE SRM Infrastructure, follow the below mentioned steps.

- 1 From the OM Application Bank window, double-click **HP Storage Essentials SRM > HPSESRMSPI Utils**. The HPSESRMSPI Utils Application Group window opens.
- 2 Drag the HP Storage Essentials SRM CMS node from the Node Bank, and drop it into the Import HPSESRM InfraStructure application.



```
Output of Application No. 7
Executed Application
/opt/ov/mon0v/per1/a/b1n/per1 /opt/ov/1b1n/HPSESPI/HPSESRMSPI_GetSEInfra.pl $0PC_NODES

Application Output
Command Output                               No. 1 of 1
                                                Node: om1rp02.ind.hp.com
                                                Time: 10/21/08 15:51:27

Adding Node Group HP SE SRM HOSTS : Operation successfully completed.
Adding Node verona.seqabl1.com : Operation successfully completed.
Adding Node mustang.ind.hp.com : Operation successfully completed.
Adding Node savana.cluster.com : Operation successfully completed.
Adding Node om1d105.ind.hp.com : Operation successfully completed.
Adding Node om1d117.ind.hp.com : Operation successfully completed.
Adding Node om1d101.ind.hp.com : Operation successfully completed.
Adding Node om1d116.ind.hp.com : Operation successfully completed.
Adding Node vectrax.ind.hp.com : Operation successfully completed.
Adding Node lebaron.ind.hp.com : Operation successfully completed.
Adding Node volante.ind.hp.com : Operation successfully completed.
Adding Node persona.cluster.com : Operation successfully completed.
Adding Node crossfire.ind.hp.com : Operation successfully completed.
```

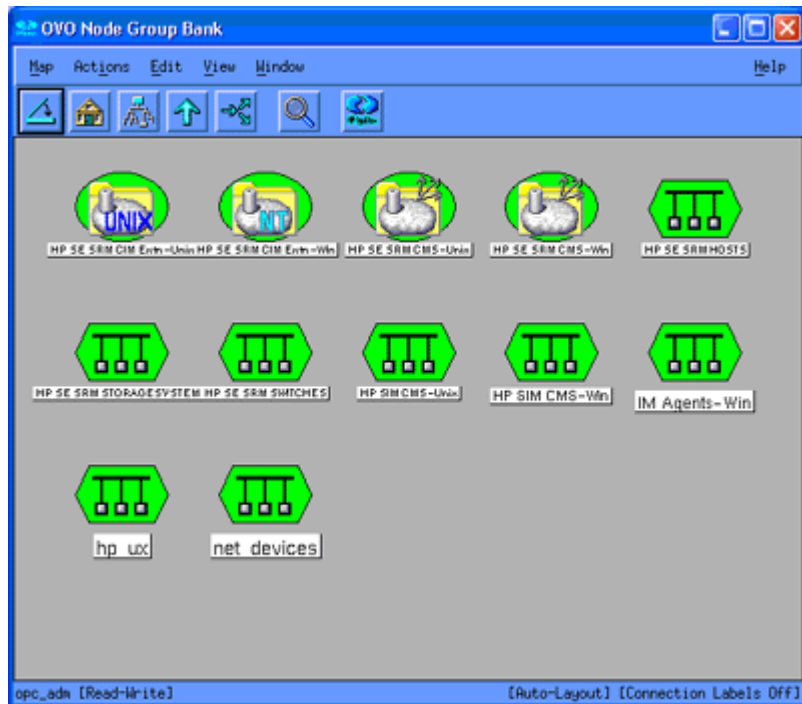


This tool can be executed only on HTTPS agent nodes

- 3 Click **Enter** and the command prompt window closes.

Now the HP SE SRM Infrastructure (Hosts, Switches and Storage Systems) is added to the OM Node Bank under the Node Group **HP SE SRM INFRA** with the following sub groups.

- HP SE SRM HOSTS
- HP SE SRM SWITCHES
- HP SE SRM STORAGESYSTEMS



In order to delete the HPSESRMSPI Infrastructure node groups and the nodes that they contain, run the following command:

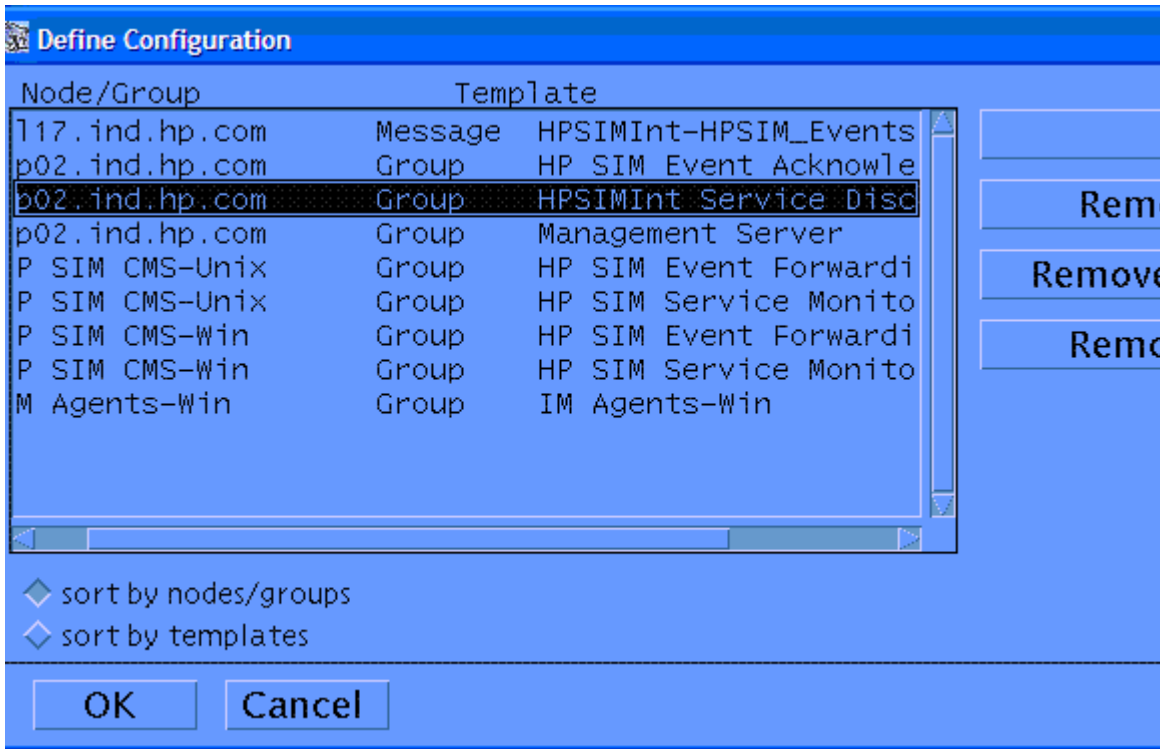
```
/opt/OV/nonOV/perl/a/bin/perl /opt/OV/lbin/HPSESPI/  
HPSESRMSPI_CleanSEInfra.pl
```

Task 9: Set Up Service Discovery

To deploy HP Storage Essentials SRM Service Discovery templates, follow these steps:

- 1 Select the HPOM management server node in Node Bank window.
- 2 Select **Actions > Agents > Assign Templates**. The Define Configuration window opens showing templates assigned to this node.
- 3 Click **Add**. The Add Configuration window opens.
- 4 Click **Open Template Window**. The Message Source Templates window opens.
- 5 Select **HP Storage Essentials SRM > Service Discovery** template from the Message Source Templates window.
- 6 Go back to the Add Configuration window.
- 7 Click **Get Template Selections**. The Service Discovery group appears in the Templates pane.
- 8 Click **OK** in the Add Configuration window.

The following figure shows the Service Discovery template group assigned to the HPOM server in the Define Configuration window.



- 9 Click **OK** in the Define Configuration window.
- 10 Select **Action > Agents > Install / Update OM Software and Configuration**.
- 11 From the Install/Update VPO Software and Configuration window, select **Templates**.
- 12 Select **Force Update** to ensure that the modifications are distributed.
- 13 Click **OK** to distribute the templates to the HPOM server.
- 14 Open the message browser for the node, and wait for the following message:

The following configuration information was successfully distributed: Templates.

This message is displayed on the message browser because you have privileges for the OpC message group. If you cannot view this message, modify the responsibilities assigned to HPOM user to include the OpC message group.

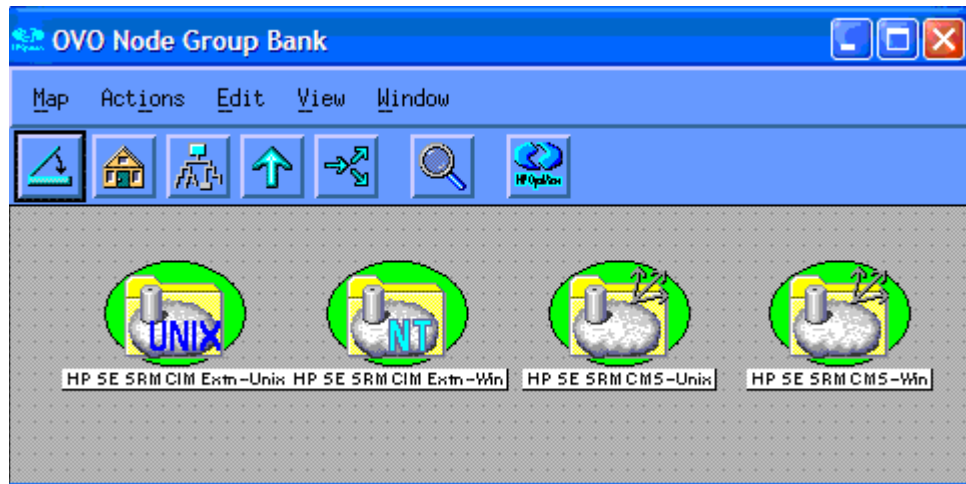
You can initiate the discovery process manually on the HP Storage Essentials SRM CMS node by running **Service Discovery-Unix** or **Service Discovery-Win** from the HPSESRMSPI Utils Application Group on the Storage Essentials SRM CMS node.

4 Using the HP Storage Essentials SRM SPI

Using the HP Storage Essentials SRM SPI Node Groups

Installing the HP Storage Essentials SRM SPI creates the following node groups:

- CIM Extension-Unix
- CIM Extension-Win
- CMS-Unix
- CMS-Win



The node groups provide a logical grouping of managed nodes and correspond to the following application groups.

Table 13 List of node groups and their corresponding application group

Node Groups	Application Groups
CMS-Unix	AppStorManager-Unix
CMS-Win	AppStorManager-Win
CIM Extension-Unix	CIM Extension-Unix
CIM Extension-Win	CIM Extension-Win

Using HP Storage Essentials SRM SPI Applications

The HP Storage Essentials SRM SPI adds the top-level application group HP Storage Essentials SRM in the OM Application bank window. The following applications are available in the HP Storage Essentials SRM application group:

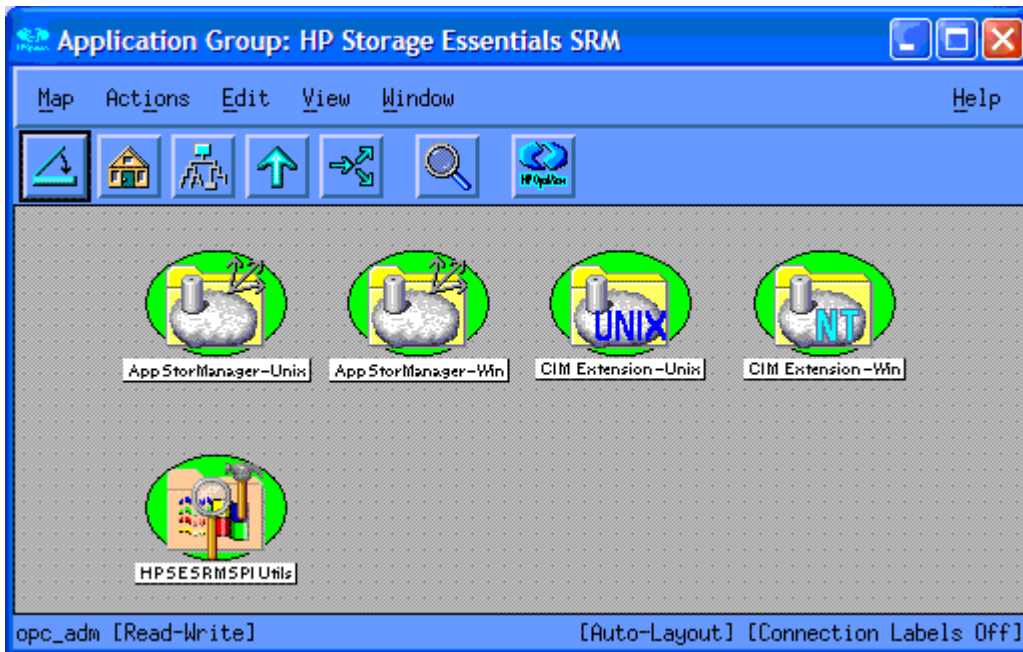
- AppStorManager-Unix
- AppStorManager-Win
- CIM Extension-Unix
- CIM Extension-Win
- HPSESRMSPI Utils



Running the Storage Essentials SRM SPI applications on the HPOM Java console by selecting a node on service view is not supported. To run the applications on the HPOM Java console, select node in the Nodes pane on the HPOM Java console and right click **Start > HP Storage Essentials SRM**.

The HPOM Java console on Windows requires X-windows emulator software to be installed on the PC for the Storage Essentials SRM SPI applications to function properly.

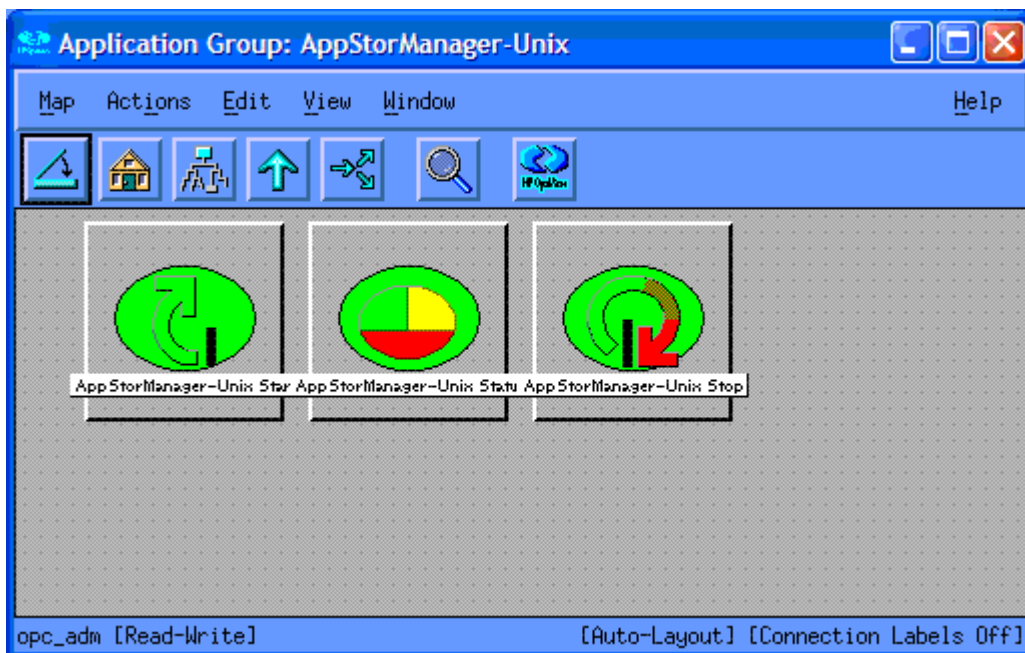
To access the Storage Essentials SRM SPI application groups, double-click **HP Storage Essentials SRM**. The Storage Essentials SRM SPI Application Group window opens.



Using the AppStorManager Application Group

The **AppStorManager-Unix** or **AppStorManager-Win** application group includes applications for HP Storage Essentials SRM AppStorManager that are run on HP Storage Essentials SRM central management server nodes (UNIX or Windows).

The following figure shows the AppStorManager-Unix application group window.



The AppStorManager application group includes applications that monitor the HP Storage Essentials SRM AppStorManager services on selected UNIX or Windows nodes.

The AppStorManager application group contains the following applications.

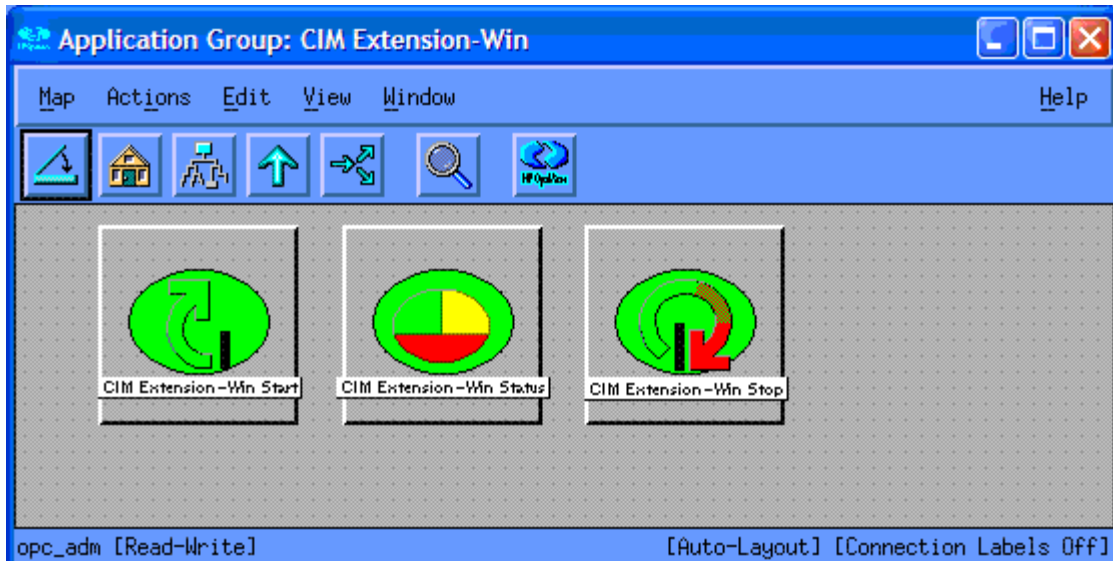
Table 14 List of Applications in AppStorManager application group

Application Group	Application Name	Description
AppStorManager-Unix	AppStorManager-Unix Start	Starts HP Storage Essentials SRM AppStorManager service on the selected Unix nodes.
	AppStorManager-Unix Status	Status of HP Storage Essentials SRM AppStorManager Service on selected Unix nodes.
	AppStorManager-Unix Stop	Stops HP Storage Essentials SRM AppStorManager Service on the selected Unix nodes.

Application Group	Application Name	Description
AppStorManager-Win	AppStorManager-Win Start	Starts HP Storage Essentials SRM AppStorManager service on the selected Windows nodes.
	AppStorManager-Win Status	Status of HP Storage Essentials SRM AppStorManager Service on selected Windows nodes
	AppStorManager-Win Stop	Stops HP Storage Essentials SRM AppStorManager Service on the selected Windows nodes.

Using the CIM Extension Application Group

The **CIM Extension-Unix** or **CIM Extension-Win** application group includes applications for HP Storage Essentials SRM CIM Extension that are run on the HP Storage Essentials SRM CIM Extension nodes (UNIX or Windows). The following figure shows the CIM Extension application group window.



The CIM Extension application group includes applications that monitor HP Storage Essentials SRM CIM Extension services on selected UNIX or Windows nodes.

The CIM Extension application group contains the following applications.

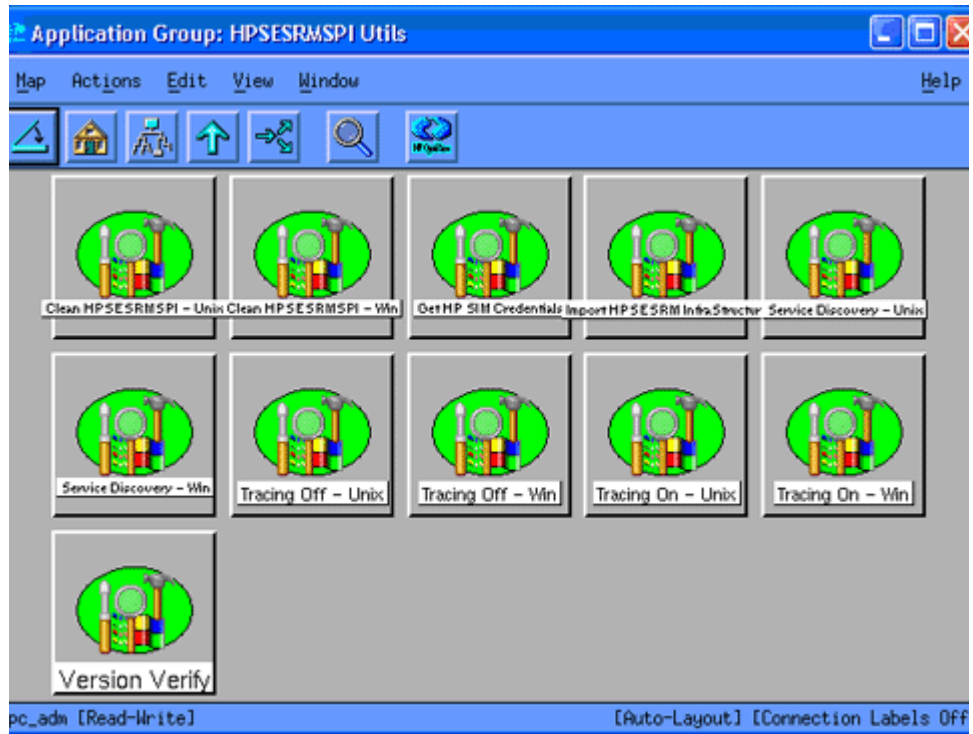
Table 15 List of Applications in CIM Extension application group

Application Group	Application Name	Description
CIM Extension-Unix	CIM Extension-Unix Start	Starts HP Storage Essentials SRM CIM Extension on the selected Unix nodes
	CIM Extension-Unix Status	Status of the HP Storage Essentials SRM CIM Extension on selected Unix nodes
	CIM Extension-Unix Stop	Stops HP Storage Essentials SRM CIM Extension on the selected Unix nodes

Application Group	Application Name	Description
CIM Extension-Win	CIM Extension-Win Start	Starts the HP Storage Essentials SRM CIM Extension on the selected Windows nodes
	CIM Extension-Win Status	Gets the status of HP Storage Essentials SRM CIM Extension on the selected Windows nodes
	CIM Extension-Win Stop	Stops the HP Storage Essentials SRM CIM Extension on the selected Windows nodes

Using the HPSESRMSPI Utils Application Group

The HPSESRMSPI Utils application group includes applications that perform administrative tasks for the HP Storage Essentials SRM SPI.



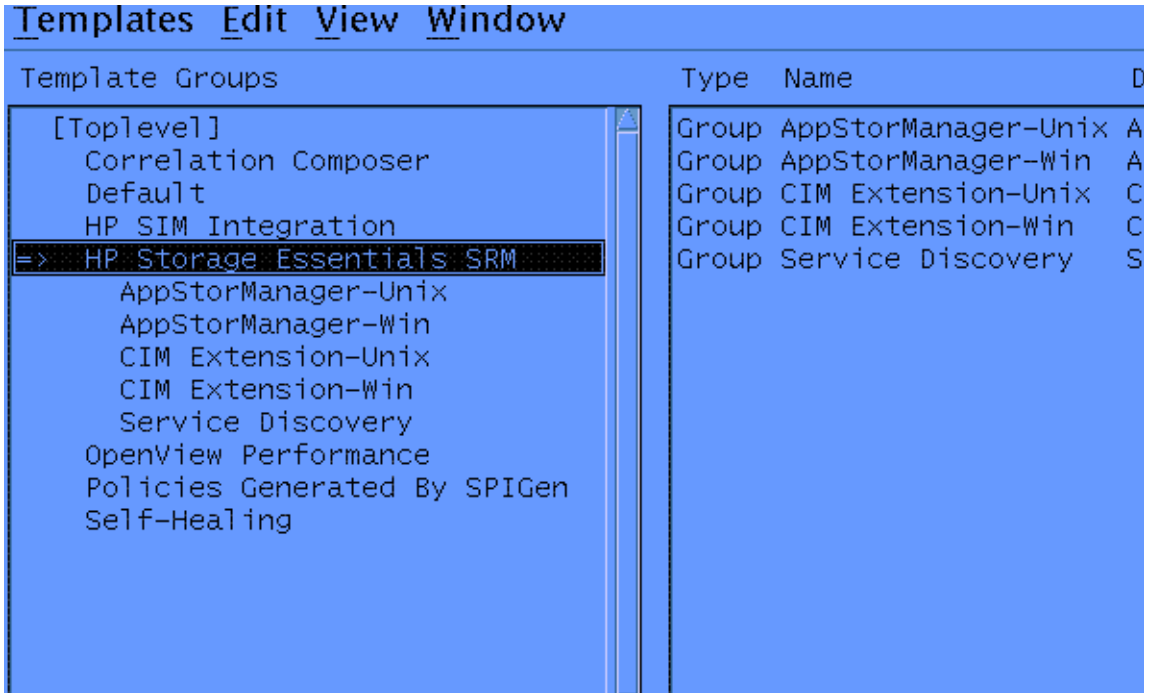
The HPSESRMSPI Utils application group consists of the following applications.

Table 16 List of applications in HPSESRMSPI Utils application group

Application Name	Description
Clean HPSESRMSPI-Unix	Deletes HP Storage Essentials SRM SPI files on selected Unix managed nodes
Clean HPSESRMSPI-Win	Deletes Storage Essentials SRM SPI files on the selected Windows managed nodes
Get HP SIM Credentials	Gets the username and password of HP Systems Insight Manager for HPSESRMSPI.
Service Discovery-Unix	Performs HP Storage Essentials SRM Service Discovery on the Unix managed nodes.
Service Discovery-Win	Performs HP Storage Essentials SRM Service Discovery on the Windows managed nodes.
Tracing Off-Unix	Sets the HPSESRMSPI tracing to OFF state on Unix managed nodes.
Tracing On-Unix	Sets the HPSESRMSPI tracing to ON state on the Unix managed nodes.
Version Verify	Verifies the version of HPSESRMSPI files.
Import HPSESRM Infrastructure	Queries the HPSESRM Infrastructure details and adds Hosts, Switches and Storage Systems to the Node Bank. Note: Get HP SIM Credentials" tool must be executed before running this tool.

Using the HP Storage Essentials SRM SPI Template Groups

Templates are grouped under the HP Storage Essentials SRM templates group.



Messages generated by the HP Storage Essentials SRM SPI templates are assigned HPOM severity level as defined in the templates. All messages generated by the Storage Essentials SRM SPI templates by default belong to the HPSESRMSPI-StorageEssentials_SRM message group.

Monitor templates monitor the status of the AppStorManager service running on the HP Storage Essentials SRM CMS node and the Storage Essentials CIM Extension service running on the Storage Essentials managed nodes. They also generate messages indicating any change in status.

The HP Storage Essentials SRM SPI supplies a Service Discovery template that is used for Service Discovery. Deployment of this template on the HPOM management server enables the HP Storage Essentials SRM SPI to discover the Storage Essentials Service views.

The following default templates are provided with the HP Storage Essentials SRM SPI.

Table 17 List of default templates provided with the HP Storage Essentials SRM SPI

Template Group	Template Name	Description	Template Type
CIM Extension-Unix	HPSESRMSPI-CIM_Extension-Unix	Monitors HP Storage Essentials SRM CIM Extension on Unix	Monitor
CIM Extension-Win	HPSESRMSPI-CIM_Extension-Win	Monitors HP Storage Essentials SRM CIM Extension on Windows	Monitor
AppStorManager-Unix	HPSESRMSPI-AppStorManager-Unix	Monitors HP Storage Essentials SRM AppStorManager service on Unix	Monitor
AppStorManager-Win	HPSESRMSPI-AppStorManager-Win	Monitors HP Storage Essentials SRM AppStorManager service on Windows	Monitor
Service Discovery	HPSESRMSPI_ServiceDiscovery-Unix	HP Storage Essentials SRM Service Discovery on Unix nodes	Scheduled
	HPSESRMSPI_ServiceDiscovery-Win	HP Storage Essentials SRM Service Discovery on Windows nodes	Scheduled



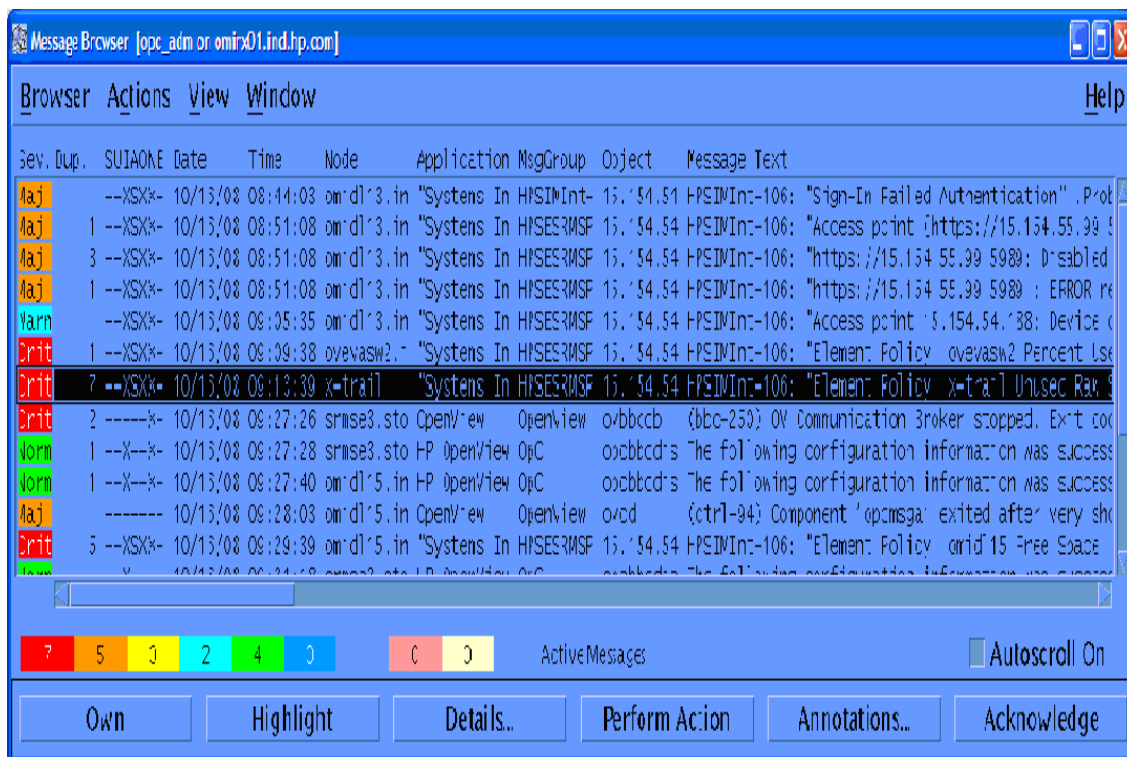
The CIM extension can be either an extension to the Windows WMI service or a separate executable called AppStorWin32Agent service. The HPSESRMSPI-CIM_Extension-Win monitor template monitors only the AppStorWin32Agent service. HPSESRMSPI-CIM_Extension-Win is disabled if this service is missing or only the extension to the WMI service is present on a Windows managed node.

Using HP Storage Essentials SRM SPI Message Groups

HPOM uses message groups to combine management information about similar or related managed objects under a chosen name and provides status information on a group level. Messages are categorized into groups to simplify message management. All messages generated by the HP Storage Essentials SRM SPI are grouped in the HPSESRMSPI-StorageEssentials_SRM message group.

Messages generated by the HP Storage Essentials SRM SPI templates are displayed in the HPOM Message Browser window. These messages contain information that enable you to understand the reported problems.

The following figure shows the OM Message Browser window with messages generated by the HP Storage Essentials SRM SPI.



The message content indicates the scope of the problem. In the context of the HP Storage Essentials SRM SPI, this information is categorized as follows:

- **Node** – Name of the Storage Essentials central management server or CIM Extension node that generates the message
- **Application** – Category of the message is Storage Essentials
- **MsgGroup** – HPSESRMSPI-StorageEssentials_SRM
- **Object** – Source of the event is HP Storage Essentials SRM CMS node or CIM Extension node
- **Message Text** – A single line description of the event

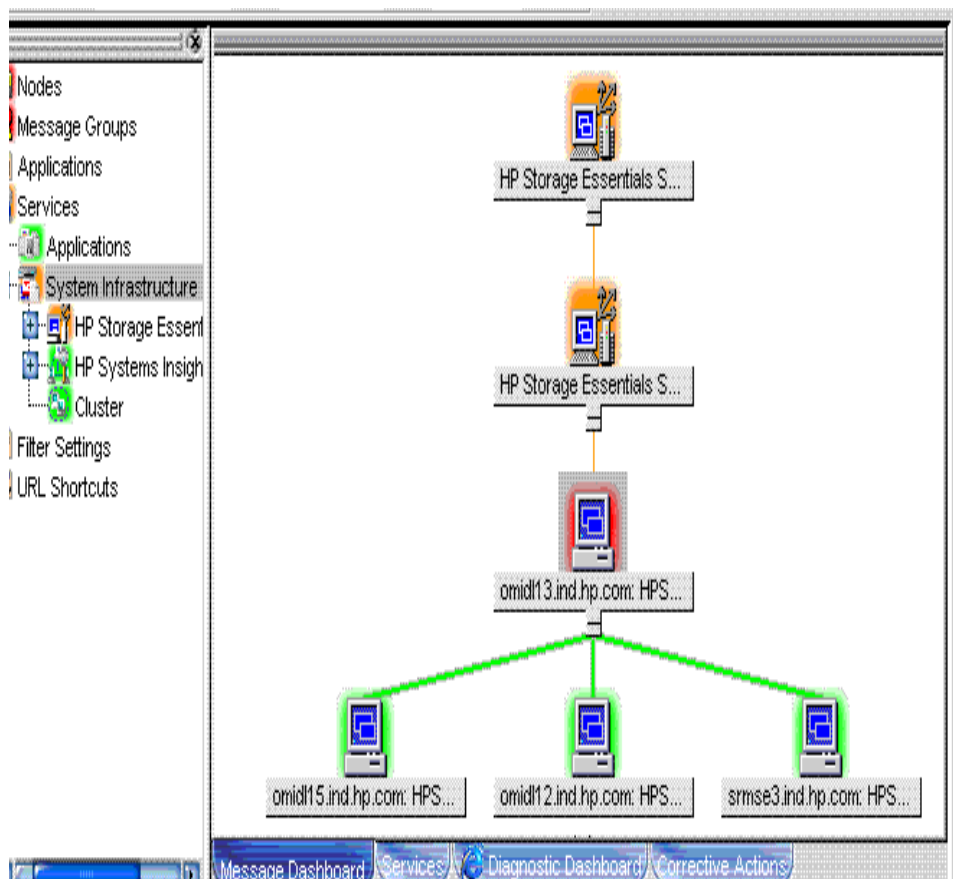
Using the HP Storage Essentials SRM SPI Service View

The HP Storage Essentials SRM SPI provides the administrator with the additional perspective of service views. The SPI discovers the services automatically and uses the discovered data to generate service maps that can be viewed by the administrator from the HPOM console.

Storage Essentials SRM managed hosts are discovered by querying the Storage Essentials SRM CMS for its organizations and managed hosts. Some of the nodes represented in this tree may not be HPOM managed nodes. Status is only shown for CIM Extension nodes that have an HP Operations agent installed and the HP Storage Essentials SRM SPI configured.

You can decide whether these nodes must be configured as HPOM managed nodes or not. You can also decide whether the Storage Essentials templates must be installed or not. If the nodes in this tree are HPOM managed nodes with the Storage Essentials templates deployed, the service view node status changes according to the status of the CIM Extension on the node.

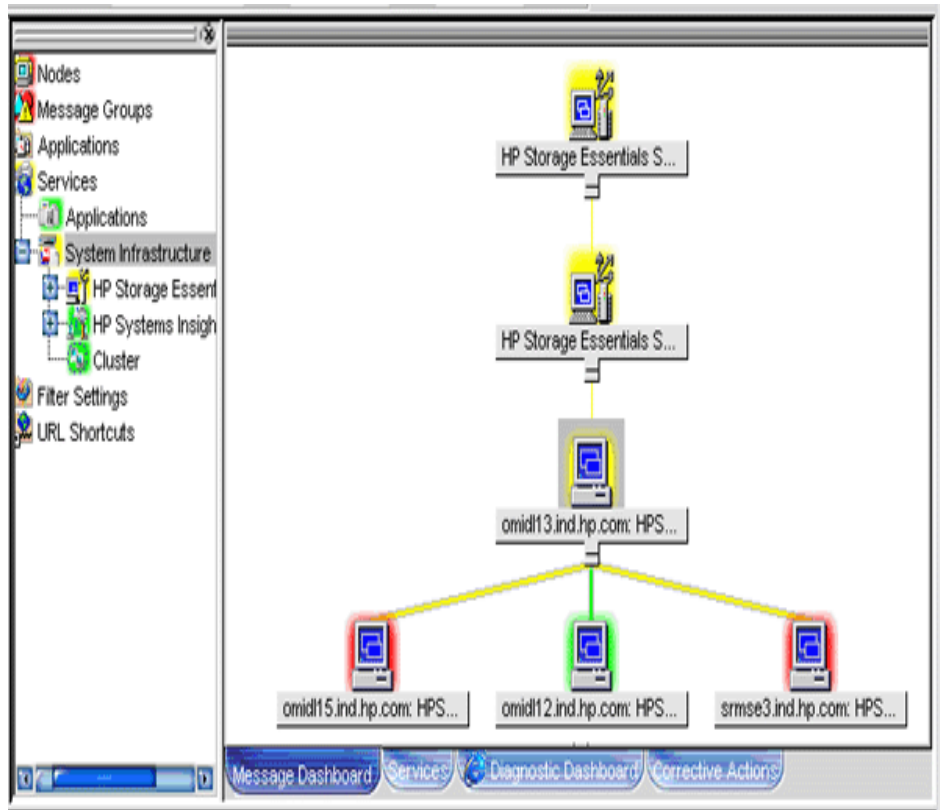
The following figure shows the services discovered by the HP Storage Essentials SRM SPI when the AppStorManager service is not running.



Legend:

- 1 Storage Essentials CMS node
- 2 Organizations in Storage Essentials CMS Node
- 3 Nodes that have the CIM Extensions installed/running

The following figure shows the services discovered by the HP Storage Essentials SRM SPI when the CIM Extension is not running.



The service discovered by the HP Storage Essentials SRM SPI enables root-cause analysis of problems in crucial elements on the CIM Extension node in a Storage Essentials network managed storage network.



Propagation rules for the objects in the Storage Essentials service trees are defined as Unchanged by default. This means that a parent service does not change the status of a child object. Such a scenario is feasible only if a parent service considered the status of one child service to be more important than the status of another child service. Calculation rules for the Storage Essentials service trees are set to Most Critical by default. Therefore, if a parent service has more than one child service, the parent service assumes the status equal to the highest severity of its child services.

The status of the HP SE CMS Organization will be equal to the highest severity of its child services.

In the present scenerio, all events are generated from the SE managed Devices mapped to the SIM CMS.. To correctly map all the events to the devices we have to add the nodes to OM Nodebank. SE managed nodes are queried and added to the OM Node Bank as message nodes.

When the events reach the OM from SIM CMS Server, the events are mapped to SE Managed Nodes instead of SE CMS Server.

Applying the HP Storage Essentials SRM SPI Services to Non-default Users

The HP Storage Essentials SRM SPI services are by default assigned to `hpsearmspi_op` and `opc_adm` users. To apply the HP Storage Essentials SRM SPI services to an additional user, enter the following command in a command shell on the HPOM server:

```
opcservice -assign <username> "HP Storage Essentials SRM"
```

Viewing Services

The service views are created after Storage Essentials CMS is added to an **AppStorManager-Uinx** or **AppStorManager-Win** node group and service discovery is invoked. See [Task 8: Import HP SE SRM Infrastructure](#) on page 46 for instructions on invoking service discovery via application or templates.

For information on adding Storage Essentials CMS to the **AppStorManager-Uinx** or **AppStorManager-Win** node group, see [Task 3: Add Nodes to the HP Storage Essentials SRM Node Groups](#) on page 34.

You must manually deploy the templates on the HPOM management server or run the appropriate **Service Discovery** application for the service view to generate services named HP Storage Essentials SRM for the Operations Manager Service Navigator. Make sure that you perform the steps given in [Task 7: Obtain HP Storage Essentials SRM CMS credentials](#) on page 43 and [Task 8: Import HP SE SRM Infrastructure](#) on page 46 before performing the steps for viewing the discovered HP Storage Essentials SRM service.

To view the discovered HP Storage Essentials SRM service, follow these steps:

- 1 Log on to the **OM Java Console**.

For information on how to install the HPOM Java Console, see the *HP Operations Manager Vantage Point Operations for UNIX Administrator's Reference Volume II*.

- 2 Select **Services > System Infrastructure** on the left pane.
- 3 Right-click **System Infrastructure** and select **Show Graph** to view the HP Storage Essentials SRM Service map. The Service graph window displays all the available services.



By default, the HP Storage Essentials SRM SPI services discovery templates are configured to run discovery every day at 4:30 a.m. for Windows nodes and 5.30 a.m. for Unix nodes. The administrator can change the service discovery period by modifying the service discovery template. The modified discovery period takes effect only after the templates are redeployed on the HPOM management server node.

Reconfiguring HP SIM CMS Credentials for the HP Storage Essentials SRM SPI

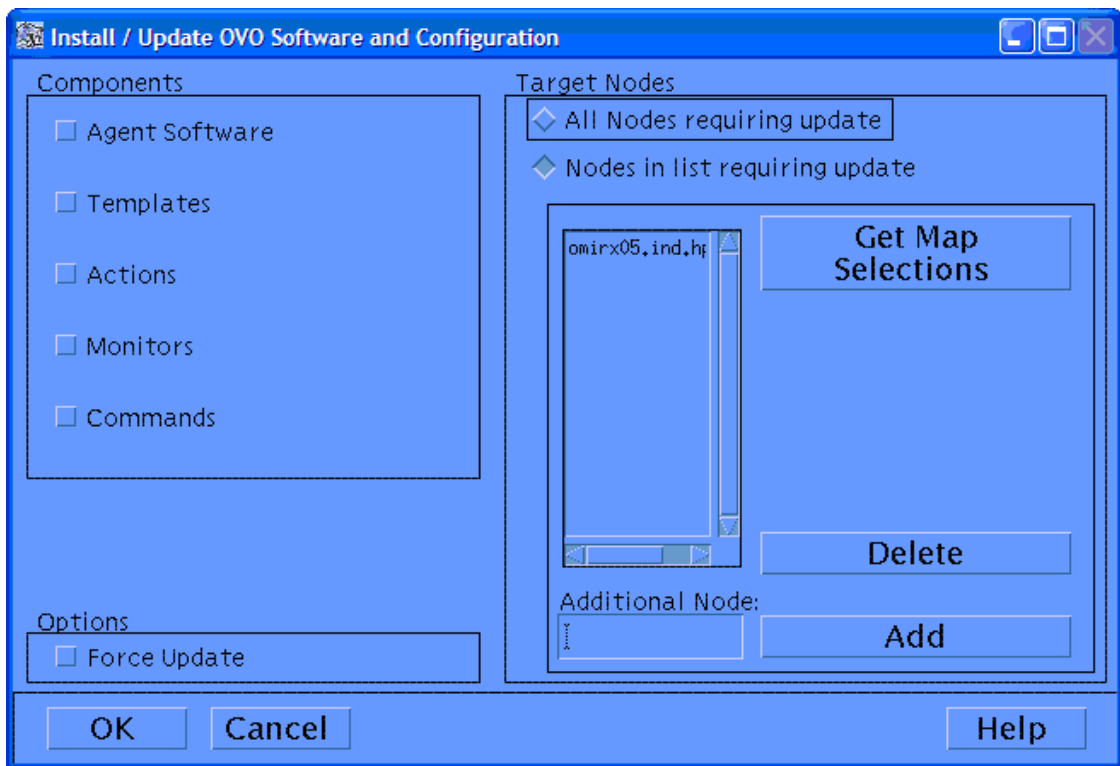
To reconfigure HP SIM CMS credentials, enter the new HP Systems Insight Manager CMS Credentials. For more information, see [Task 7: Obtain HP Storage Essentials SRM CMS credentials](#) on page 43. The credentials are used for Storage Essentials SRM service discovery.

5 Uninstalling the HP Storage Essentials SRM SPI

Removing HP Storage Essentials SRM SPI Templates from the HPOM Managed Nodes

Follow these steps:

- 1 Start the HPOM console GUI.
- 2 From the OM Node Group Bank window, press the **Ctrl** key and select all the HP Storage Essentials SRM SPI-related node groups.
- 3 Select **Actions > Agents > Assign Templates**. The Define Configuration window opens.
- 4 Select the HP Storage Essentials SRM-related Node Group, and click **Remove Selected**.
- 5 Click **OK**.
- 6 From the OM Node Group Bank window, press the **Ctrl** key and select all the Storage Essentials SRM SPI-related node groups.
- 7 Select **Actions > Agents Install / Update SW & Config**. The Install/Update OM Software and Configuration window opens.



- 8 From the Components pane, select the **Templates** check box.
- 9 Select the **Force Update** check box to ensure that the modifications are distributed.
- 10 Click **OK** to remove Storage Essentials SRM SPI templates from the HPOM managed nodes.

After you remove the Storage Essentials SRM SPI templates from the Storage Essentials-related managed nodes, you can remove the Storage Essentials-related managed nodes from the Node Bank window in the HPOM management server if you no longer wish to manage these nodes from HPOM.



The Storage Essentials SRM SPI node groups folders are removed automatically when you remove the HP Storage Essentials SRM SPI from the HPOM management server.

Removing the HP Storage Essentials SRM SPI from the Managed Nodes

Follow these steps:

- 1 From the OM Node Group Bank window, press the **Ctrl** key and select all the Storage Essentials SRM SPI-related node groups.
- 2 Open the **HPSESRMSPI Utils** application group in the Storage Essentials SRM SPI application group.
- 3 Run **Clean HPSESRMSPI-Unix** or **Clean HPSESRMSPI-Win** to delete all HP Storage Essentials SRM SPI files on selected Unix or Windows managed nodes.

Removing Nodes from a Node Group

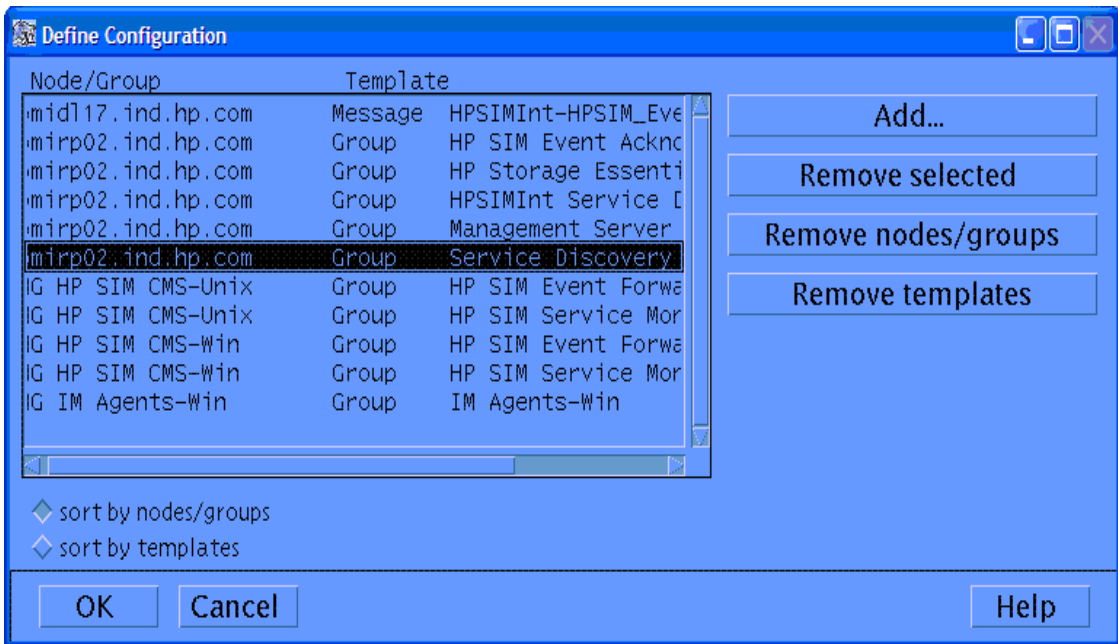
Follow these steps:

- 1 Open AppStorManager-Win node group in the Node Group Bank.
- 2 Select all the nodes.
- 3 Right-click the nodes and select **Remove From This Group**.
- 4 Repeat steps 2 and 3 to remove nodes from AppStorManager-Unix, CIM Extension-Win, and CIM Extension-Unix node groups.

Removing Storage Essentials SRM SPI Templates from the HPOM Management Server Node

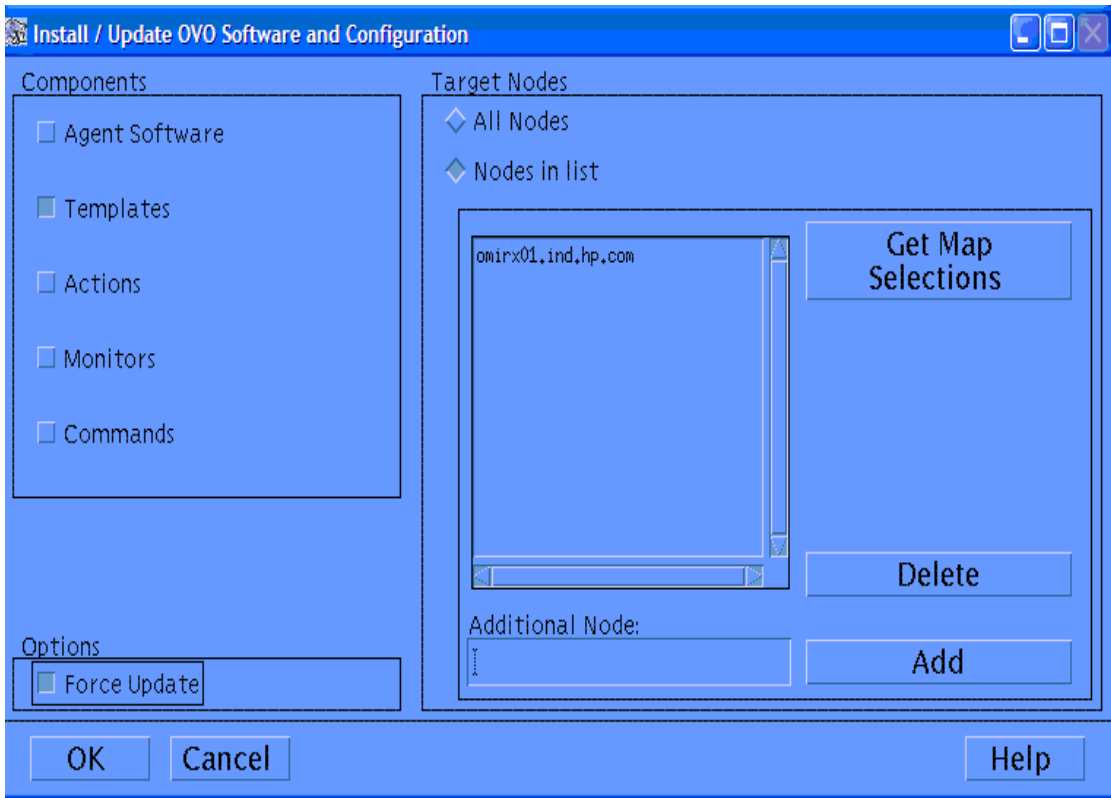
Follow these steps:

- 1 Start the HPOM console GUI.
- 2 Select **Actions > Agents > Assign Templates**. The Define Configuration window opens.
- 3 Select the HP Storage Essentials SRM SPI template group Service Discovery associated with the HPOM management server node, as shown in the following figure.



- 4 Click **Remove Selected**.
- 5 Click **OK**.
- 6 From the OM Node Bank window, select the HPOM management server node.

- 7 Select **Actions > Agents Install / Update SW & Config**. The Install/Update OM Software and Configuration window opens.



- 8 From the Components pane, select the **Templates** check box.
- 9 Select the **Force Update** check box to ensure that the modifications are distributed.
- 10 Click **OK** to remove the HP Storage Essentials SRM SPI templates from the HPOM management server node.

Removing the HP Storage Essentials SRM SPI from the HPOM Management Server

Uninstalling on a HP-UX System

Follow these steps:

- 1 Log on to the HPOM management server as root and open a terminal window.
- 2 In the terminal window, enter the following command:

```
/usr/sbin/swremove HPSESRMSPI
```

This removes all the HP Storage Essentials SRM SPI components from the HPOM management server.



Components of the HP Storage Essentials SRM SPI in the HPOM GUI are automatically removed when you remove the HP Storage Essentials SRM SPI.

Check the following log file for more information on HPSESRMSPI uninstallation:

```
/var/opt/OV/log/SPIInstallLogs/HPSESRMSPI_UnInstall.log
```

For more information on removing HP Operations Manager Smart Plug-ins, see the *HP Operations Manager Smart Plug-ins DVD Installation Guide*.

Uninstalling on a Solaris System

- 1 Log on to the HPOM management server as root and open a terminal window.
- 2 In the terminal window, enter the following command:

```
/usr/sbin/pkgrm HPOvSpiSesrm
```

- 3 This removes all the HP Storage Essentials SRM SPI components from the HPOM management server.



Components of the HP Storage Essentials SRM SPI in the HPOM GUI are automatically removed when you remove the HP Storage Essentials SRM SPI.

Check the following log file for more information on HPSESRMSPI uninstallation:

```
/var/opt/OV/log/SPIInstallLogs/HPSESRMSPI_UnInstall.log
```

For more information on removing HP Operations Manager Smart Plug-ins, see the HP Operations Manager Smart Plug-ins DVD Installation Guide.

6 Troubleshooting

Start by checking the following:

- Make sure that the HP Storage Essentials SRM SPI is installed properly. For more information, see [Chapter 2, Installing the HP Storage Essentials SRM SPI](#).
- Make sure that the HP Storage Essentials SRM SPI is configured properly. For more information, see [Chapter 3, Configuring the HP Storage Essentials SRM SPI](#).

If the HP Storage Essentials SRM SPI is correctly installed and configured, the messages that appear in the HPOM message browser will be intercepted by the HP Storage Essentials SRM SPI policies and will appear in the HPOM message browser in the form you expect.

The following reference services are also available.

- The HP support site:

<http://hp.com/go/hpsoftwaresupport>

If the problem persists, refer to the following list of error messages.

Error Messages and Solutions

No Storage Essentials service monitoring events arrive on the HPOM message browser

Solution:

- 1 Make sure that the connection between the HPOM management server, the HP Storage Essentials SRM CMS, and the CIM Extension nodes is up and running.
- 2 Verify whether the HP Operations agent has been correctly installed and configured on the management server, and the HP Operations agent processes and, in particular, the control agent, are running.
- 3 Make sure that the Storage Essentials CMS and CIM Extension nodes are added to the appropriate node groups. For more information, see [Adding a Managed Node to the HP Storage Essentials SRM CMS Node Group](#) on page 35.
- 4 Make sure that the Storage Essentials SRM SPI templates were correctly deployed to the Storage Essentials CMS and CIM Extension nodes.
- 5 If service monitoring fails on a managed node, check if the Storage Essentials SRM SPI monitor templates are disabled on this node. Enable it or redeploy the monitor template to the managed node. This situation can arise when the monitor template was deployed to the node before installation of HP Storage Essentials SRM CMS or CIM Extension and the monitor template is automatically disabled.

HP Storage Essentials SRM services are not visible on the HPOM console

Solution:

- Make sure that the connection between the HPOM management server and the Storage Essentials CMS nodes is up and running.
- Verify whether the HP Operations agent was correctly installed and configured on the management server, and the HP Operations agent processes and, in particular, the control agent, are running.

- Make sure that the correct HP SIM Credentials are entered when configuring the Storage Essentials CMS node before adding the node to the AppStorManager-Unix *or* AppStorManager-Win node group. For more information, see [Task 7: Obtain HP Storage Essentials SRM CMS credentials](#) on page 43.
- If there are multiple Storage Essentials CMS nodes with different credentials, the Get HP SIM CMS Credentials application must be launched for one node at a time and that node must be added to the AppStorManager-Unix *or* AppStorManager-Win node group before entering the credentials for the next node.
- Make sure that the Service Discovery Templates at **Message Source Templates > HP Storage Essentials SRM > Service Discovery** are deployed on the HPOM management server node.
- After the Service Discovery application is executed, if the HPSESRMSPI_hostmap.log file on the HP Storage Essentials SRM CMS node has the following exception, this indicates that the HP SIM Credentials are missing:

```

java.lang.IllegalArgumentException: Connection cannot be
null
at
com.appiq.toolkit.common.impl.APIModelImpl.<init>(APIMode
lImpl.java:51)
at com.appiq.toolkit.common.impl.ManagerImpl.<init>
(ManagerImpl.java:27)
at
com.appiq.toolkit.topology.impl.TopologyManagerImpl.<init
> (TopologyManagerImpl.java:36)
at com.appiq.toolkit.topology.TopologyFactory.
getTopologyManager(TopologyFactory.java:39)
at HostTopoExtractor.createHostMap
(HostTopoExtractor.java:159)
at HostTopoExtractor.main(HostTopoExtractor.java:274)

```

Run the Get HP SIM Credentials application and then run the Service Discovery application.

The HPSESRMSPI_hostmap.log file is present in the following directory:

HP Storage Essentials SRM CMS on Windows node: %OvInstallDir%/data/log (OM HTTPS Agent) and %OvAgentDir%/log(OM DCE agent)

Operator-initiated action on the HPOM message browser is disabled, preventing the execution of remote actions on DCE nodes

Solution:

If Perform/Stop action is disabled for messages from DCE managed nodes, follow these configuration steps:

- 1 Open `/etc/opt/OV/share/conf/OpC/mgmt_sv/remactconf.xml` for editing.
- 2 Insert the following rules in the xml file:

```
<rule>
  <doc>Actions from AppStorManager-Win node group to
  management server</doc>
  <if>
    <source>
      <nodegroup>AppStorManager-Win</nodegroup>
    </source>
    <target>
      <mgmtsrv/>
    </target>
    <certified>>false</certified>
  </if>
  <allow/>
</rule>
<rule>
  <doc>Actions from AppStorManager-Unix node group to
  management server</doc>
  <if>
    <source>
      <nodegroup>AppStorManager-Unix</nodegroup>
    </source>
    <target>
      <mgmtsrv/>
    </target>
    <certified>>false</certified>
  </if>
  <allow/>
</rule>
<rule>
  <doc>Actions from CIM Extension-Win node group to
  management server</doc>
```

```
<if>
  <source>
    <nodegroup>CIM Extension-Win</nodegroup>
  </source>
  <target>
    <mgmtsrv/>
  </target>
  <certified>>false</certified>
</if>
<allow/>
</rule>
<rule>
  <doc>Actions from CIM Extension-Unix node group to
  management server</doc>
  <if>
    <source>
      <nodegroup>CIM Extension-Unix</nodegroup>
    </source>
    <target>
      <mgmtsrv/>
    </target>
    <certified>>false</certified>
  </if>
  <allow/>
</rule>
```

3 Save and close the file.

A Applications

Tracing On-Unix and Tracing Off-Unix

The Tracing On-Unix and Tracing Off-Unix features enable you to start and stop the tracing of the collection of matrixes into a file. Run this application only when instructed by your HP support representative.

- Tracing On-Unix saves information about the collection of matrixes in a file.
- Tracing Off-Unix stops saving information about the collection of matrixes.

If tracing is enabled, all tracing information generated by the Storage Essentials SRM SPI scripts and executables is written to the following file:

Linux:

```
/var/opt/OV/log/HPSESRMSPI/HPSESRMSPI.trc
```

You can enable tracing by setting a flag in the configuration file/data:

Linux:

```
/var/opt/OV/conf/ HPSESRMSPI/HPSESRMSPI.cfg
```

- ▶ The Storage Essentials SRM SPI supports tracing only on UNIX managed nodes where HP Storage Essentials SRM CMS is running.
- ▶ The Trace ON/OFF application is only applicable for the service discovery module of Storage Essentials SRM SPI

HP Storage Essentials SRM Application Group

The HP Storage Essentials SRM SPI adds the top-level application group HP Storage Essentials SRM in the HPOM Application bank window. The following applications are available in the HP Storage Essentials SRM application group:

- AppStorManager-Unix
- AppStorManager-Win
- CIM Extension-Unix
- CIM Extension-Win
- HPSESRMSPI Utils

AppStorManager Application Groups

The AppStorManager application group contain the following applications.

Table 18 List of applications in AppStorManager application groups

Application Group	Application Name	Description
AppStorManager-Unix	AppStorManager-Unix Start	Starts HP Storage Essentials SRM AppStorManager service on the selected Unix nodes.
	AppStorManager-Unix Status	Gets the status of HP Storage Essentials SRM AppStorManager Service on the selected Unix nodes.
	AppStorManager-Unix Stop	Stops HP Storage Essentials SRM AppStorManager Service on the selected Unix nodes.
AppStorManager-Win	AppStorManager-Win Start	Starts HP Storage Essentials SRM AppStorManager service on the selected Windows nodes.
	AppStorManager-Win Status	Gets the status of HP Storage Essentials SRM AppStorManager Service on the selected Windows nodes.
	AppStorManager-Win Stop	Stops HP Storage Essentials SRM AppStorManager Service on the selected Windows nodes.

CIM Extension Application Groups

The CIM Extension application groups contain the following applications.

Table 19 List of applications in CIM Extension application groups

Application Group	Application Name	Description
CIM Extension-Unix	CIM Extension-Unix Start	Starts HP Storage Essentials SRM CIM Extension on the selected Unix nodes
	CIM Extension-Unix Status	Gets the status of the HP Storage Essentials SRM CIM Extension on the selected Unix nodes
	CIM Extension-Unix Stop	Stops HP Storage Essentials SRM CIM Extension on the selected Unix nodes
CIM Extension-Win	CIM Extension-Win Start	Starts the HP Storage Essentials SRM CIM Extension on the selected Windows nodes
	CIM Extension-Win Status	Gets the status of HP Storage Essentials SRM CIM Extension on the selected Windows nodes
	CIM Extension-Win Stop	Stops the HP Storage Essentials SRM CIM Extension on the selected Windows nodes



CIM extension can be either an extension to the Windows WMI service or a separate process running as the AppStorWin32Agent service. The HPSESRMSPI-CIM_Extension-Win monitor template monitors only the AppStorWin32Agent service. HPSESRMSPI-CIM_Extension-Win is disabled on the node if this service is not present on a Windows managed node.

HPSESRMSPI Utils Application Group

The HPSESRMSPI Utils application group contains the following applications.

Table 20 List of applications in HPSESRMSPI Utils application group

Application Group	Application Name	Description
HPSESRMSPI Utils	Clean HPSESRMSPI-Unix	Deletes Storage Essentials SRM SPI files on the selected Unix managed nodes
	Clean HPSESRMSPI-Win	Deletes Storage Essentials SRM SPI files on the selected Windows managed nodes
	Get HP SIM Credentials	Gets the user name and password of HP SIM for Storage Essentials SRM SPI.
	Service Discovery-Unix	Performs HP Storage Essentials SRM Service Discovery on the Unix managed nodes.
	Service Discovery-Win	Performs HP Storage Essentials SRM Service Discovery on the Windows managed nodes.
	Tracing Off-Unix	Sets the Storage Essentials SRM SPI tracing to OFF state on the Unix managed nodes.
	Tracing On-Unix	Sets the Storage Essentials SRM SPI tracing to ON state on the Unix managed nodes.
	Version Verify	Verifies the version of Storage Essentials SRM SPI files on the managed nodes.

B Templates

Templates provided with the Storage Essentials SRM SPI are grouped under the **HP Storage Essentials SRM** templates group. The following default templates are provided with the HP Storage Essentials SRM SPI template groups.

Table 21 List of default templates provided with the HP Storage Essentials SRM SPI template groups

Template Group	Template Name	Description	Template Type
CIM Extension-Unix	HPSESRMSPI-CIM_Extension-Unix	Monitors HP Storage Essentials SRM CIM Extension on UNIX	Monitor
CIM Extension-Win	HPSESRMSPI-CIM_Extension-Win	Monitors HP Storage Essentials SRM CIM Extension on Windows	Monitor
AppStorManager-Unix	HPSESRMSPI-AppStorManager-Unix	Monitors HP Storage Essentials SRM AppStorManager service on UNIX	Monitor

Template Group	Template Name	Description	Template Type
AppStorManager-Win	HPSESRMSPI-AppStorManager-Win	Monitors HP Storage Essentials SRM AppStorManager service on Windows	Monitor
Service Discovery	HPSESRMSPI_ServiceDiscovery-Unix	HP Storage Essentials SRM Service Discovery on UNIX nodes	Scheduled
	HPSESRMSPI_ServiceDiscovery-Win	HP Storage Essentials SRM Service Discovery on Windows nodes	Scheduled

C Service Discovery File Locations

HPOM Management Server

The HPOM Service Navigator/Discovery Output files contain information about errors that occur during the service discovery process; for example, if a node is down or not responding.



You can set values for variables in the discovery configuration file to enable tracing and to receive discovery related messages from the managed nodes. To enable tracing, the variable `SPI_DISC_TRACE` should be set to `ON`. To receive discovery related messages from the node, the variable `MSG_ALLOW` should be set to `Y`. By default, tracing is set to `OFF` and `MSG_ALLOW` is set to `N`.

The Service Discovery file locations on the HPOM Management Server are the following:

Table 22 List of Service Discovery file locations on the HPOM Management Server

File Type	Storage Essentials SRM SPI File Location
Discovery Server Script	/opt/OV/lbin/SPISvcDisc/SPI_DiscServ.sh
Logs	/var/opt/OV/log/SPISvcDisc/discovery_error.log

File Type	Storage Essentials SRM SPI File Location
Service Configuration File (XML)	/var/opt/OV/share/conf/SPISvcDisc/ HPSESRMSPI-Unix/ HPSESRMSPI-UnixSvcDisc_\${NODENAME}.xml /var/opt/OV/share/conf/SPISvcDisc/ HPSESRMSPI-Win/ HPSESRMSPI-WinSvcDisc_\${NODENAME}.xml
Discovery Configuration File	/var/opt/OV/conf/SPISvcDisc/ HPSESRMSPI-Unix_DiscConf.sh
Trace (if tracing is enabled)	/var/opt/OV/log/SPISvcDisc/ discovery_trace_HPSESRMSPI-Unix.log /var/opt/OV/log/SPISvcDisc/ discovery_trace_HPSESRMSPI-Win.logI

HPOM Managed Nodes for HTTPS Agents

The following list shows the directory locations for the Service Discovery files that the HP Storage Essentials SRM SPI deploys on HPOM managed nodes for HTTPS agents.

Table 23 List of Service Discovery files deployed on HPOM managed nodes for HTTPS agents

File Type	Storage Essentials SRM SPI File Location
Discovery Client Script	%OvInstallDir%\data\bin\Instrumentation\SPIDiscClient.pl
Discovery Modules	Windows: %OvInstallDir%\data\bin\Instrumentation Linux: /var/opt/OV/bin/instrumentation
Logs	Windows: %OvInstallDir%\data\log\SPISvcDisc\HPSESRM SPI-Win_discovery.log Linux: /var/opt/OV/log/SPISvcDisc/HPSESRMSPI-Unix_discovery.log
Service Configuration File (XML)	Windows: %OvInstallDir%\data\tmp\SPISvcDisc\HPSESRM SPI-Win_discovery.xml Linux: /var/opt/OV/tmp/SPISvcDisc/HPSESRMSPI-Unix_discovery.xml
Trace (if tracing is enabled)	Windows: %OvInstallDir%\data\log\SPISvcDisc\HPSESRM SPI-Win_discovery.trc Linux: /var/opt/OV/log/SPISvcDisc/HPSESRMSPI-Unix_discovery.trc

HPOM Managed Nodes for DCE Agents

The following table lists the directory locations for the Service Discovery files that the HP Storage Essentials SRM SPI deploys on HPOM managed nodes for DCE agents.

Table 24 List of Service Discovery files deployed on HPOM managed nodes for DCE agents

File Type	Storage Essentials SRM SPI File Location
Discovery Client Script	%OvAgentDir%\bin\OpC\cmds\SPI_DiscClient.pl
Discovery Modules	Windows: %OvAgentDir%\bin\OpC\cmds Linux: /var/opt/OV/bin/OpC/cmds
Logs	Windows: %OvAgentDir%\tmp\SPISvcDisc\HPSIMInt-Win_discovery.xml Linux: /var/opt/OV/tmp/SPISvcDisc/HPSIMInt-Unix_discovery.xml
Service Configuration File (XML)	Windows: %OvAgentDir%\log\SPISvcDisc\HPSESRMSPI-Win_discovery.log Linux: /var/opt/OV/log/SPISvcDisc/HPSESRMSPI-Unix_discovery.log
Trace (if tracing is enabled)	Windows: %OvAgentDir%\log\SPISvcDisc\HPSESRMSPI-Win_discovery.trc Linux: /var/opt/OV/log/SPISvcDisc/HPSESRMSPI-Unix_discovery.trc

Index

A

- application group
 - AppStorManager, 54, 87
 - CIM Extension, 56, 88
 - HPSESRMSPI, 89
 - HPSESRMSPI Utils, 58

C

- chargeback, 10
- CIM, 10
- CMS, 12
- command
 - HP Storage Essentials SRM, 28
 - swinstall, 20, 22, 23
 - to generate the HPSESRMSPI.su file, 41
 - to get the value for \$CIMExtnPath, 42
 - to install the HP Storage Essentials SRM SPI, 21

D

- DMTFs, 10

G

- groups
 - application, 13
 - template, 13

H

- HPOM, 12, 63
 - administrator, 12, 30
 - agents, 12
 - Discovery Output files, 93
 - Java console, 52
 - management server, 17
 - message browser, 79
- HP SIM, 9, 12
 - CMS, 12
 - credentials, 45, 81
 - Integration, 12
- HP Storage Essentials SRM, 9, 52, 69, 86
 - CMS, 85
 - CMS node, 60
 - Service Discovery templates, 69
 - service map, 69
 - services, 69
 - SPI, 58, 63, 65, 67, 77, 79, 86, 94
 - services, 68
 - template groups, 91

M

- management
 - Backup, 10
 - NAS, 10
 - Performance, 10
 - Soft Quota, 10
 - Utilization, 9

message group
 HPSESRMSPI-StorageEssentials_SRM,
 63

MIBs, 10

MIFs, 10

N

Node, 64

R

requirements
 disk space, 15
 software, 17

rules
 calculation, 68
 propagation, 68

S

Service Discovery, 13, 45

service monitoring, 80

SNMPs, 10

T

template
 monitor
 HPSESRMSPI-CIM_Extension-Win,
 62
 Service Discovery, 61

templates
 monitor, 60

Tracing
 Off-Unix, 85
 On-Unix, 85

V

viewing services, 68

visualization, 9

W

WBEM, 10

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