

# HP Operations Smart Plug-in for HP Storage Essentials SRM

for HP Operations Manager for HP-UX, Linux, and Solaris

Software Version: 2.03

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## Installation and Configuration Guide

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# Contents

<b>1</b>	<b>HP Storage Essentials SRM Overview</b> .....	<b>9</b>
	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
<b>2</b>	<b>Installing the HP Storage Essentials SRM SPI</b> .....	<b>15</b>
	Hardware Requirements .....	15
	Disk Space Requirements. ....	16
	Software Requirements .....	17
	HPOM Management Server Versions .....	17
	HP Storage Essentials CMS Versions .....	18
	CIM Extension and HPOM Agent Versions .....	19
	Installing the HP Storage Essentials SRM SPI. ....	20
	Installing on the HP-UX System. ....	20
	Mount the DVD on HP-UX. ....	20
	Using the swinstall Command. ....	21
	Using the swinstall GUI on HP-UX. ....	21
	Installing on the Solaris System .....	23
	Using the pkgadd Command specifying the instance. ....	23
	Using the pkgadd Command to select the instance from the menu .....	23
	Verifying Installation on HP-UX System .....	24
	Verifying Installation on Solaris System .....	25
	Installed File Locations .....	26
<b>3</b>	<b>Configuring the HP Storage Essentials SRM SPI</b> .....	<b>27</b>
	Task 1: Install the HP Operations Agent .....	27
	Task 2: Assign HP Storage Essentials SRM User Responsibilities .....	28
	Task 3: Add Nodes to the HP Storage Essentials SRM Node Groups. ....	30

Adding a Managed Node to the HP Storage Essentials SRM CIM Extn Node Group	30
Adding a Managed Node to the HP Storage Essentials SRM CMS Node Group . . . .	31
Task 4: Deploy Commands, Policies, and Instrumentation on the HP Storage Essentials SRM CMS or CIM Extension Nodes . . . . .	33
Task 5: Configure the HP Operations Agent for a Non-root User. . . . .	36
Providing Access to Storage Essentials SRM SPI Tools . . . . .	36
Task 6: Configuring the HP SE SRM SPI to forward HP SE SRM events to HPOM . . .	37
Specifying a Filter for Events forwarded from Storage Essentials to HPOM. . . . .	37
Enable event forwarding from HP SE SRM CMS to HPOM . . . . .	40
Task 7: Configuring Event Acknowledgement from HP SE SRM CMS to HPOM. . . . .	42
Task 8: Configuring Event Clearing from HPOM to HP SE SRM CMS . . . . .	42
Task 9: Obtain HP Storage Essentials SRM CMS credentials . . . . .	43
Task 10: Import HP SE SRM Infrastructure . . . . .	45
Task 11: Set Up Service Discovery . . . . .	48
<b>4 Using the HP Storage Essentials SRM SPI . . . . .</b>	<b>49</b>
Using the HP Storage Essentials SRM SPI Node Groups . . . . .	49
Using HP Storage Essentials SRM SPI Tools . . . . .	49
Using the AppStorManager Tool Group . . . . .	50
Using the CIM Extension Tool Group . . . . .	55
Using the HPSESRMSPI Utils Tool Group . . . . .	56
Using the HP Storage Essentials SRM SPI Policy Groups . . . . .	58
Using HP Storage Essentials SRM SPI Message Groups . . . . .	61
Using the HP Storage Essentials SRM SPI Service View . . . . .	63
Applying the HP Storage Essentials SRM SPI Services to Non-default Users. . . . .	65
Viewing Services . . . . .	66
Reconfiguring HP SE SRM CMS Credentials for the HP Storage Essentials SRM SPI .	67
<b>5 Uninstalling the HP Storage Essentials SRM SPI . . . . .</b>	<b>69</b>
Removing HP Storage Essentials SRM SPI Policies from the HPOM Managed Nodes .	69
Removing the HP Storage Essentials SRM SPI Elements from the Managed Nodes . .	70
Removing Nodes from a Node Group . . . . .	70
Removing Storage Essentials SRM SPI Policies from the HPOM Management Server Node . . . . .	71
Removing the HP Storage Essentials SRM SPI from the HPOM Management Server . . . . .	72

Uninstalling on a HP-UX System .....	72
<b>6 Troubleshooting</b> .....	<b>75</b>
Self-Healing Info Application .....	75
Error Messages and Solutions .....	76
No Storage Essentials service monitoring events arrive on the HPOM message browser .....	76
HP Storage Essentials SRM services are not visible on the HPOM console .....	76
<b>A Tools</b> .....	<b>79</b>
Tracing On-Unix and Tracing Off-Unix .....	79
HP Storage Essentials SRM Tool Group .....	80
AppStorManager Tool Groups .....	81
CIM Extension Tool Groups .....	83
HPSESRMSPI Utils Tool Group .....	84
<b>B Policies</b> .....	<b>87</b>
<b>Index</b> .....	<b>89</b>





# 1 HP Storage Essentials SRM Overview

HP Storage Essentials SRM (HP SE 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.

It features a base management console and an expanding portfolio of value added plug-ins. When HP Storage Essentials is integrated with HP System Insight Manager (HP SIM), 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 HP SE SRM (the HP Storage Essentials SRM SPI) integrates HP SE SRM with HP Operations Manager (HPOM). The HPOM management scope for the HP Storage Essentials SRM SPI includes storage infrastructure managed by HP SE SRM installed in an environment that consists of the HPOM.

The HP Storage Essentials SRM SPI is used to monitor the HP SE SRM services and infrastructure. The HP Storage Essentials SRM SPI, forwards events from HP SE SRM Central Management Server (CMS) to HPOM.

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 HPOM database. The HPOM intelligent agents are configured on the HP SE SRM CMS.

The HPOM intelligent agents are configured on 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

The HP Storage Essentials SRM SPI offers the following:

- **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.

- **Policy groups**

Contains policies for monitoring the HP SE CMS process (AppStorManager) and the HP SE CIM Extension process, policies for forwarding events from HP SE SRM CMS to HPOM and policies for clearing events on HP SE SRM CMS when the corresponding events are cleared on the HPOM.

- **Tool groups**

Contains tools to start, stop, and view the status of the HP SE CMS process (AppStorManager) and the HP SE CIM Extension process. It also has tools to import the SE SRM Infrastructure elements to the HPOM Node Bank and forward SE SRM events to HPOM.



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## 2 Installing the HP Storage Essentials SRM SPI

This chapter provides information on installing the HP Storage Essentials SRM SPI.

### Hardware Requirements

The following documents explain all the hardware requirements:

- For the HPOM 9.x management server:  
*HP Operations Manager for UNIX Installation Guide*
- For HPOM 9.x HTTPS managed nodes:  
*HP Operations Manager HTTPS Agent Concepts and Configuration Guide*

## Disk Space Requirements

**Table 1 Disk space requirements**

<b>System</b>	<b>Operating System</b>	<b>Installation</b>	<b>Runtime Files</b>	<b>Total</b>
HPOM management server (includes documentation)	HP-UX 11. 31 IA	4 MB	1 MB	5 MB
HPOM managed node	HP-UX 11.31 IA HP-UX 11.11 HP-UX 11.31 PA HP-UX 11.23 IA HP-UX 11.23 PA	1MB	1 MB	2 MB
	Solaris 8, 9,10			
	RedHat Linux Advanced Server 4.0 (32-bit) RedHat Linux Advanced Server 5.0 (32-bit) SuSE Linux Enterprise Server 9 (32-bit and 64-bit)			
	AIX 5.1, 5.2 and 5.3			
	Tru64 5.1B			
	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 UNIX 9.00
  - HP Storage Essentials SRM 6.0 (SP4), 6.1.0, 6.1.1
  - 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

<b>HPOM Management Server</b>	<b>Operating System</b>	<b>HPOM Agent Types</b>
HPOM for Unix 9.0x	HP-UX 11.31 IA	HTTPS
HPOM for Solaris 9.0x	Solaris 5.10	HTTPS

## HP Storage Essentials CMS Versions

**Table 3** Versions of HP Storage Essentials CMS

<b>HP Storage Essentials SRM</b>	<b>Operating System</b>
HP Storage Essentials 6.0, SP4 HP Storage Essentials 6.1.0 HP Storage Essentials 6.1.1	<ul style="list-style-type: none"><li>• Windows 2003</li><li>• Windows 2003 R2 (32-bit)</li><li>• RedHat Linux EL 4.0(32-bit)</li><li>• SuSE Linux ES 9 (32-bit) and SLES 10</li></ul>

## CIM Extension and HPOM Agent Versions

**Table 4 Versions of CIM Extension and HPOM Agent**

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

# Installing the HP Storage Essentials SRM SPI

Before you install and configure the HP Storage Essentials SRM SPI software, make sure you delete the previously installed Storage Essentials SRM SPI version. This is a mandatory step before you proceed with the installation.

Also 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.

### Mount the DVD on HP-UX

- 1 Log on as user root.
  - 2 Set the user root's umask by entering:  
**umask 027**
  - 3 Create a directory to mount the DVD:  
**mkdir /<mount\_point>**  
For example: **mkdir /dvdrom**
  - 4 Insert the DVD into the disk drive and mount it as user root by entering:  
**mount /dev/<dvdrom\_drive\_name> /<mount\_point>**  
For example, for a local DVD, you might enter:  
**mount /dev/dsk/c0t2d0 /dvdrom**
- You can also run SAM and mount the DVD to a specific path in the Disks and File Systems window.

## Using the swinstall Command

Follow these steps:

- 1 Log on to the HPOM management server as a root user.
- 2 Mount the DVD.
- 3 Enter the following command to install the HP Storage Essentials SRM SPI:

HP-UX:

```
/usr/sbin/swinstall -s /DVDROM/HPUX/  
HP_Operations_Smart_Plug-ins_HPUX.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 below log files for any errors:  
/var/adm/sw/swagent.log  
/var/opt/OV/log/SPIInstallLogs/HPSESRMSPI\_Install.log

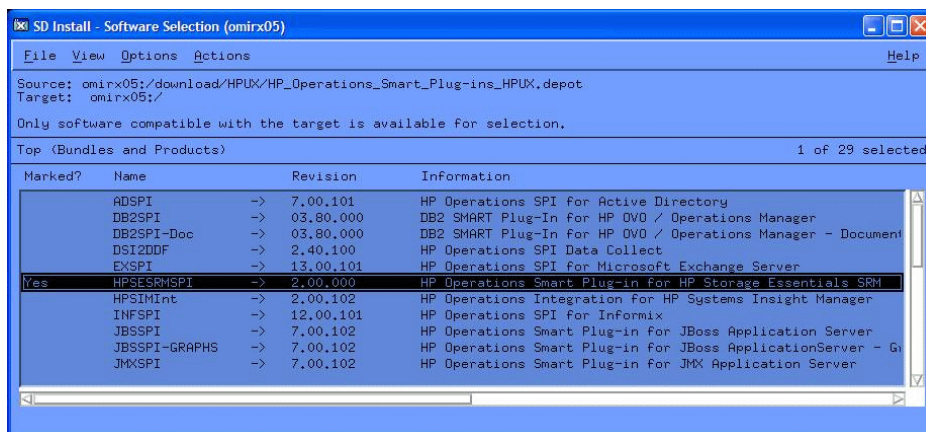
## Using the swinstall GUI on HP-UX

Follow these steps:

- 1 Log on to the HPOM management server as a root user.
- 2 Mount the DVD.
- 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 /DVDROM/HPUX/  
HP_Operations_Smart_Plug-ins_HPUX.depot HPSESRMSPI
```

The SD Install-Software Selection window opens.



- 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` 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.

# Installing on the 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.
- 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.
- 3 Ensure that the DISPLAY environment variable is set to the appropriate node name.
- 4 Enter the following command to install HP Storage Essentials SRM by selecting the HP Storage Essentials SRM instance

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

The instances get listed in a menu.

From the menu list, select the HPOvSpiSesrm instance and complete the installation

# Verifying Installation on HP-UX System

To verify the installation, follow these steps:

On the command line, run the following command:

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

The command returns:

**Table 5 Output of the command** `/usr/sbin/swlist HPSESRMSPI`

HPSESRMSPI	02.00.0000	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 (configuration, executables, and scripts).

**Table 6 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
Tool Group	HP Storage Essentials SRM
Message Source Templates	HP Storage Essentials SRM
Message Group	HPSESRMSPI-StorageEssentials_SRM
User	hpsesrmspi_op
User Profile	HP Storage Essentials SRM SPI Admin

On the HPOM management server, check the following assignment of policy 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 policy groups from the HPOM for UNIX Admin UI.



**Table 7 List of policy groups assigned to node groups**

<b>Node Groups</b>	<b>Policy Groups</b>
HP SE SRM CIM Extn-Unix	CIM Extension-Unix
HP SE SRM CIM Extn-Win	CIM Extension-Win
HP SE SRM CMS-Unix	AppStorManager-Unix
HP SE SRM CMS-Win	AppStorManager-Win

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

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

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

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

## Verifying Installation on Solaris System

To verify the installation, follow these steps:

On the command prompt, enter the following command:

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

```
application HPOvSpiSesrm HP Operations Smart Plug-in for HP  
Storage Essentials SRM
```

## Installed File Locations

The installation process creates the following files and directories.

**Table 8 List of directories where the installed files are located**

<b>Component</b>	<b>Location</b>
Binaries	/opt/OV/lbin/HPSESPI
HPOM Server Configuration	/var/opt/OV/share/tmp/OpC_appl/ HPSESRMSPi
Icon Files for Applications	/etc/opt/OV/share/bitmaps/C/ software
Application Icon Registration File	/etc/opt/OV/share/symbols/C/ Software/Software_HPSESPI

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

**Table 9 List of directories deployed to the HTTPS managed nodes**

<b>Operating System</b>	<b>Installed Location</b>
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 tools 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, policies, and HPSESRMSPI-StorageEssentials\_SRM message groups assigned to them. They can also manage and control the Storage Essentials CMS and CIM Extension nodes.

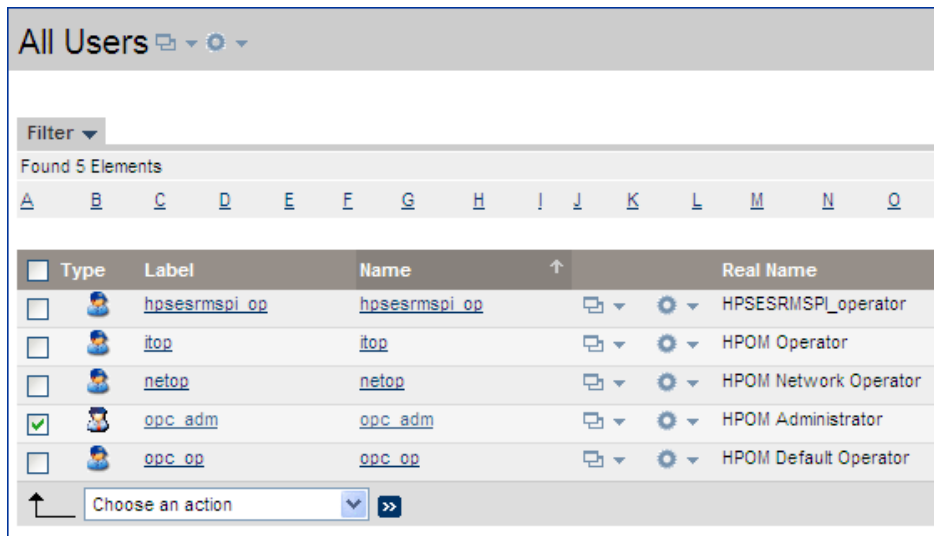
The HP Storage Essentials SRM SPI Admin user policy authorizes a user for the following functions:

- 1 Message browsing of the HPSESRMSPI-StorageEssentials\_SRM message group
- 2 Execution rights to any tool in the HP Storage Essentials SRM tool group

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

- 1 Log on to the HPOM as administrator.
- 2 Click **Browse** → **All Users**. The All Users window opens.

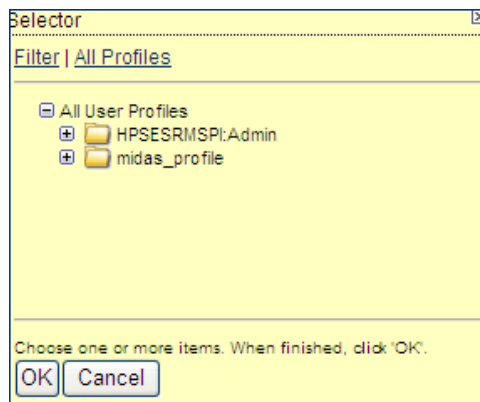
- 3 Select an user. For example, `opc_admin`.



The screenshot shows a web interface titled "All Users". At the top, there is a "Filter" dropdown and a status bar indicating "Found 5 Elements". Below this is a navigation bar with letters A through Q. The main content is a table with columns: Type, Label, Name, and Real Name. The table lists five users: `hpesrmspi_op`, `itop`, `netop`, `opc_admin` (which is checked), and `opc_op`. At the bottom of the table, there is a "Choose an action" dropdown menu and a "Submit" button with a right-pointing arrow.

Type	Label	Name	Real Name
<input type="checkbox"/>	<a href="#">hpesrmspi_op</a>	<a href="#">hpesrmspi_op</a>	HPESRMSPI_operator
<input type="checkbox"/>	<a href="#">itop</a>	<a href="#">itop</a>	HPOM Operator
<input type="checkbox"/>	<a href="#">netop</a>	<a href="#">netop</a>	HPOM Network Operator
<input checked="" type="checkbox"/>	<a href="#">opc_admin</a>	<a href="#">opc_admin</a>	HPOM Administrator
<input type="checkbox"/>	<a href="#">opc_op</a>	<a href="#">opc_op</a>	HPOM Default Operator

- 4 Select **Assign Profiles** from the **Chose an Action** drop-down box and click **Submit**. The Selector window opens.
- 5 Click **All Profiles**. Select a profile from the list.



The screenshot shows a "Selector" dialog box with a yellow background. At the top, there is a "Filter" dropdown set to "All Profiles". Below this is a tree view showing "All User Profiles" expanded, with two sub-items: "HPESRMSPI:Admin" and "midas\_profile". At the bottom of the dialog, there is a message: "Choose one or more items. When finished, click 'OK'." and two buttons: "OK" and "Cancel".

- 6 Click **OK**.



For more information on assigning user responsibilities, see the *HP Operations Manager for Unix 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 policy groups already assigned:


- HP SE SRM CIM Extn-Unix
- HP SE SRM CIM Extn-Win
- HP SE SRM CMS-Unix
- HP SE SRM CMS-Win



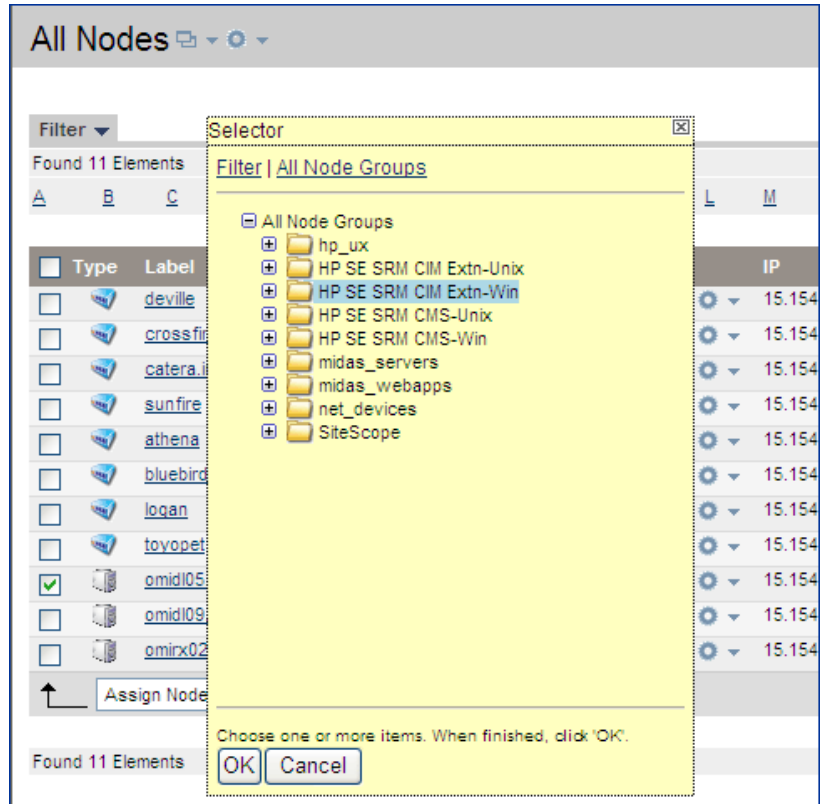
The HP Storage Essentials SRM SPI node groups are associated with respective policy groups.

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

Follow these steps:

- 1 Open the All Nodes window and select the nodes.
- 2 Select **Assign Node to Node Group...** from the **Chose an Action** drop-down box and click **Submit** . The Selector window opens.

- 3 Click **All Node Groups**. Select a Node Group from the list.




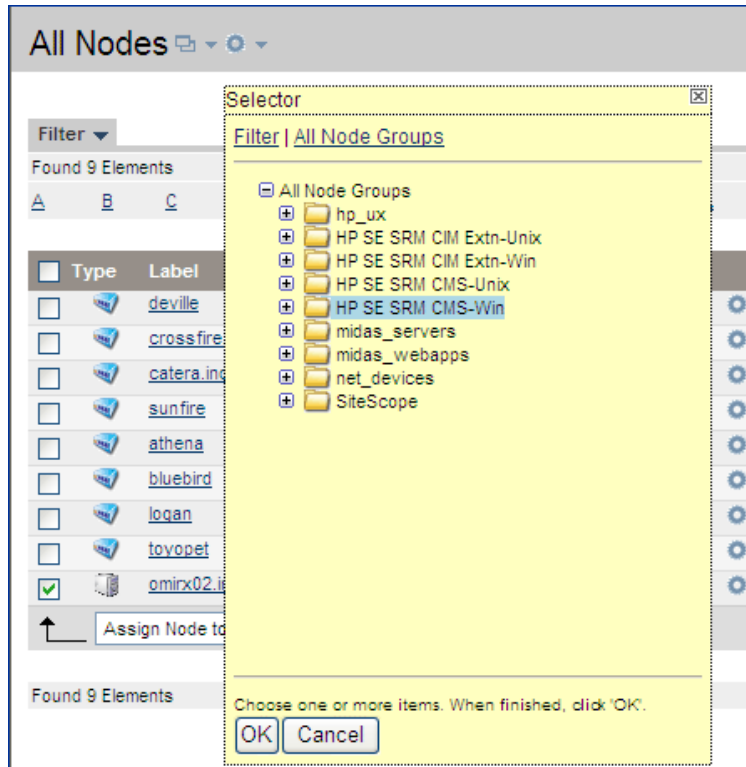
- 4 Click **OK**.

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

Follow these steps:

- 1 Open the All Nodes window and select HP SE SRM CMS nodes.

- 2 Select **Assign Node to Node Group...** from the **Chose an Action** drop-down box and click **Submit** .



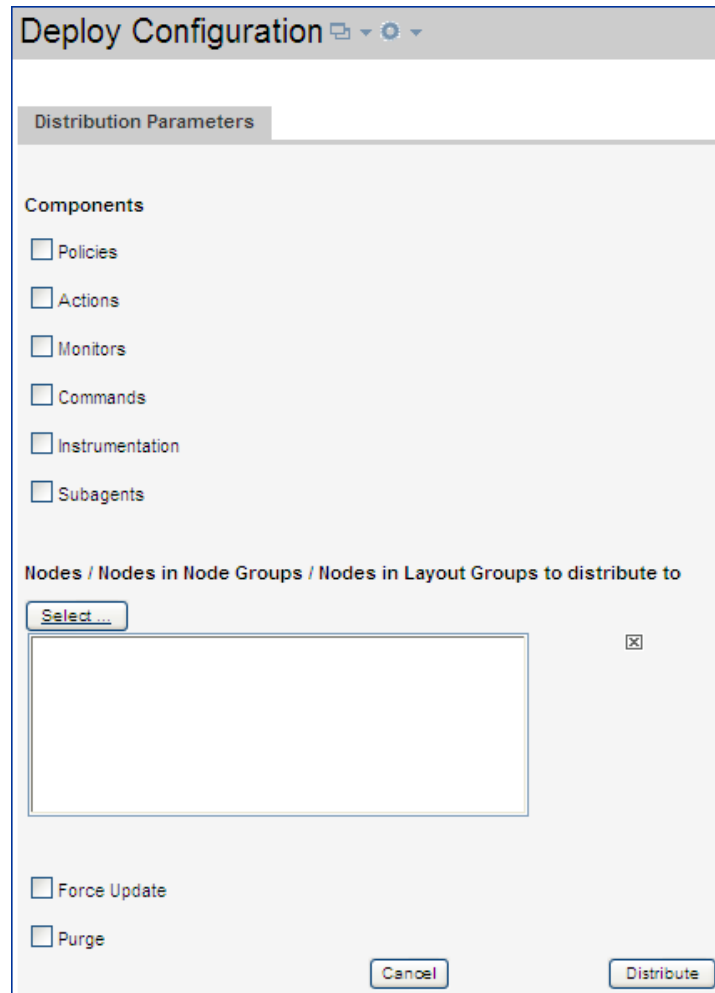
- 3 Click **OK**.



# Task 4: Deploy Commands, Policies, and Instrumentation on the HP Storage Essentials SRM CMS or CIM Extension Nodes

Follow these steps:



- 1 Select **Deployment** → **Deploy Configuration**. The Deploy Configuration window opens.



The screenshot shows the 'Deploy Configuration' window with the following elements:

- Header:** 'Deploy Configuration' with window control icons.
- Tab:** 'Distribution Parameters' is selected.
- Components:** A list of checkboxes for 'Policies', 'Actions', 'Monitors', 'Commands', 'Instrumentation', and 'Subagents', all of which are currently unchecked.
- Nodes:** A section titled 'Nodes / Nodes in Node Groups / Nodes in Layout Groups to distribute to' containing a 'Select...' button and an empty list box.
- Options:** Checkboxes for 'Force Update' and 'Purge', both unchecked.
- Buttons:** 'Cancel' and 'Distribute' buttons at the bottom right.

- 2 Select the nodes to which **Policies**, **Commands**, and **Instrumentation** need to be distributed.

Deploy Configuration  

**Distribution Parameters**

**Components**

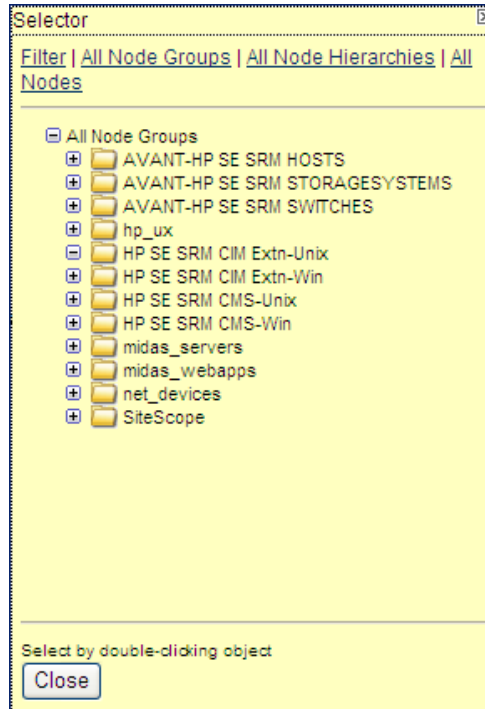
- Policies
- Actions
- Monitors
- Commands
- Instrumentation
- Subagents

**Nodes / Nodes in Node Groups / Nodes in Layout Groups to distribute to**

Force Update

Purge

- 3 Click **Select**. The Selector window opens.



- 4 Select the nodes where you want to deploy the policies, commands, and instrumentation.
- 5 Click **Close**.

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

Distribution was successful

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 the appropriate profile assigned.

## Task 5: 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 Tools

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



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

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

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

## Task 6: Configuring the HP SE SRM SPI to forward HP SE SRM events to HPOM

To forward HP SE SRM Events, complete the following steps:

- 1 Specifying a Filter for Events Forwarded from Storage Essentials SRM to HPOM.
- 2 Enable event forwarding from HP SE SRM CMS to HPOM.

### Specifying a Filter for Events forwarded from Storage Essentials to HPOM

Users can filter events forwarded from Storage Essentials SRM to HPOM.

Filtering events sent to HPOM has the following advantages:

- **Improved usability** - Although all event notification is theoretically useful, some events may have little information value. For example, Log In/ Log out events for Storage Essentials SRM may be of little interest to an administrator who is concerned primarily with important and critical SAN events. The administrator can filter out these “informational” events.
- **Increased system performance** - Storage Essentials can generate a large number of events that appear in HPOM. Certain events can be filtered out in order to limit the communication traffic.

Events can be filtered based on the following:

- **Event severity** - Use the `<event-filter-severity>` tag to filter out events by severity.
- **Element type** - Use the `<event-filter-element-type>` tag to filter out events by element type.
- **Element name** - Use the `<event-filter-element-name>` tag to filter out events by element name.

It is possible to specify multiple filter criteria, in which case the resulting filter is a disjunction (the logical *or*) of the filter conditions. For example, the following filter excludes events from hosts or events from all element types with INFORMATIONAL severity from being forwarded from Storage Essentials to HPOM.

Essentials to HPOM:

```
<HP-config>
<event-filter-severity>INFORMATIONAL</event-filter-severity>
<event-filter-element-type>HOST</event-filter-element-type>
</HP-config>
```

To filter events forwarded to HPOM:

- 1 Go to the `/opt/OV/bin/instrumentation` directory on the HP SE SRM CMS
- 2 Create a file named `hp-event-config.xml` in the `/opt/OV/bin/instrumentation` directory.
- 3 Open the `hp-event-config.xml` file in Notepad.
- 4 Add the following to the file:

```
<HP-config>
</HP-config>
```

Your filter tags will go between the `<HP-config>` tags, as shown in the following example:

```
<HP-config>
<event-filter-severity>INFORMATIONAL</event-filter-severity>
<event-filter-element-type>HOST</event-filter-element-type>
</HP-config>
```

- 5 To filter events by severity, use the `<event-filter-severity>` tag. For example, to prevent informational events from being forwarded to HP SIM, enter the following between the

`<HP-config>` tags:

```
<event-filter-severity>INFORMATIONAL</event-filter-severity>
```

You can also filter out the following event severities:

- UNKNOWN
- CRITICAL
- MAJOR
- MINOR
- INFORMATIONAL
- WARNING

- 6 To filter events by element type, use the `<event-filter-element-type>` tag. For example, to prevent events from hosts from being forwarded to HPOM, enter the following:

between the `<HP-config>` tags:

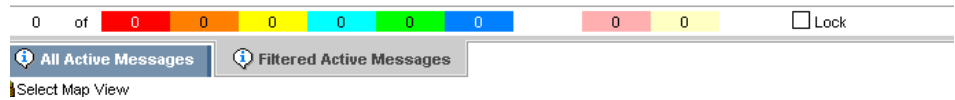
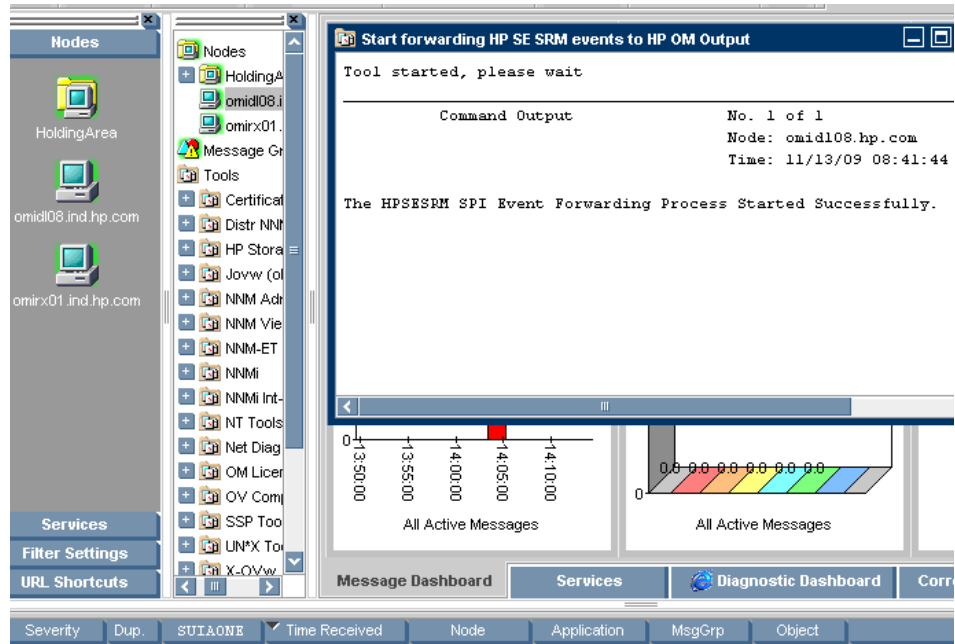
```
<event-filter-element-type>HOST</event-filter-element-type>
```

You can filter out the following element types:

- HOST
- SWITCH
- STORAGE\_SYSTEM
- TAPE\_LIBRARY

- 7 To filter events by name, use the `<event-filter-element-name>` tag. For example, to prevent events from an element named ElementA from being forwarded to HPOM, enter the following between the `<HP-config>` tags:

```
<event-filter-element-name>ElementA</
event-filter-element-name>
```



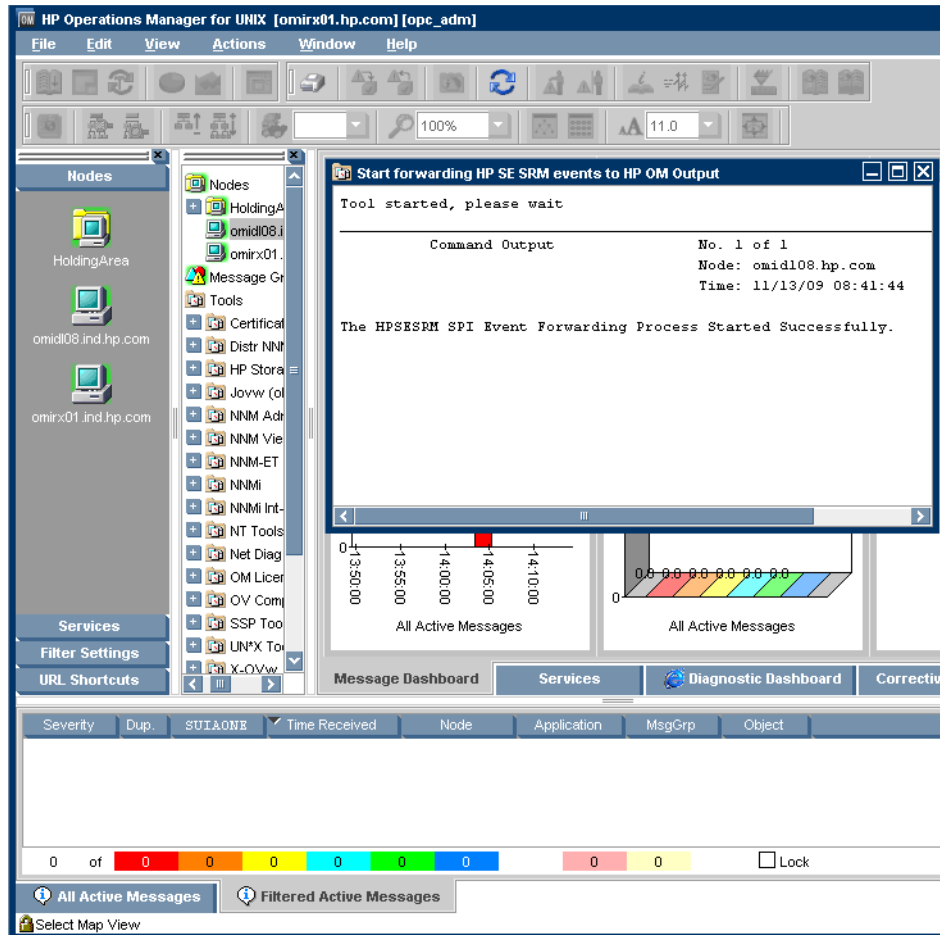
## Enable event forwarding from HP SE SRM CMS to HPOM

To start the event forwarding from HP SE SRM CMS to HPOM running on Windows or UNIX, complete the following steps:

- 1 Select the nodes where you want to launch the event forwarding tool.



- 2 Launch **Start forwarding HP SE SRM events to HPOM tool available in the Tools > HP Storage Essentials SRM > AppStormanager - Win or AppStorManager - Unix** tool group, depending on the operating system of HP SE SRM CMS node. The Select where to launch this tool appears.



This would initiate event forwarding from HP SE SRM to HPOM based on any filters set.

## Task 7: Configuring Event Acknowledgement from HP SE SRM CMS to HPOM

HP SE SRM SPI is configured to automatically acknowledge an event on the HPOM if the corresponding event is cleared in the HP SE SRM Event browser.

## Task 8: Configuring Event Clearing from HPOM to HP SE SRM CMS

HP SE SRM SPI can be configured to automatically clear an event on the HP SE SRM CMS if the corresponding event is acknowledged in the HPOM message browser.

For this functionality, the policy **HP Storage Essentials SRM > HP SE SRM Event Acknowledging > HPSESRMSPI\_HPSESRM-ClearEvents** should be deployed to the HPOM management server.

# Task 9: 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 SE SRM credentials for each HP Storage Essentials SRM CMS. This step is mandatory for service discovery of the Storage Essentials service hierarchy.

To obtain HP SE SRM credentials, follow these steps:

- 1 From the HPOM Operational UI, right-click the desired node. Select **Start** → **HP Storage Essentials SRM** → **HP SE SRM SPI Utils** → **Get HP SE SRM Credentials**.

The screenshot displays the HPOM Operational UI. A context menu is open over a node, showing the path: Start → HP Storage Essentials SRM → HP SE SRM SPI Utils → Get HP SE SRM Credentials. The background features a dashboard with several charts and a message table at the bottom.

Time Received	Node	Application	MsgGrp	Object	Message Text
12:39:58 08/17/09	omirx02.hp.c...	HP Operations ...	OpC	Licensing	Critical Notification: 1 'HP Operations Ma
12:39:51 08/17/09	omirx02.hp.c...	HP Operations ...	OpC	Licensing	Critical Notification: 1 'Agent Count' licer

- 2 The Terminal window opens and the following message is displayed if you are on an HP Storage Essentials SRM CMS node:

Enter the HP SE SRM username:

➤ You may require X-Windows to be running on the machine.

- 3 At the prompt, type the user name for HP Storage Essentials SRM CMS on this node and press **Enter**.



For domain users, if the user name starts with the special non-printing characters that have escape codes associated with them, such as *a*, *n*, *r*, and *t*, the Get HP SE SRM Credentials tool shows an error message. To avoid this, provide one more backslash with the user name. For example, if the user name is `<domain>\admin`, type the user name as `<domain>\\admin`.

The following message is displayed:

```
Enter the HP SE SRM password:
```

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

```
Re-enter password:
```

- 5 Re-type the password to confirm.

The tool 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 SE SRM CMS credentials. Possible causes could be:
```

1. HP SE SRM is not installed
2. HP SE SRM service is not running
3. HP SE SRM credentials incorrect

```
Press return to exit.
```

- 6 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.



After successful execution, the `hpsecms.conf` file is created on the HP SE SRM CMS node. This file is a prerequisite for significant features like **importing HP SE SRM infrastructure**, forwarding **HP SE SRM events** to HPOM and drawing **HP SESRM service map**. If the service discovery policy is present on the node, soon after the execution of the **Get Credentials** tool, the service map would appear if you run the tool named Service Discovery-Unix or Service Discovery-Win from the HPSESRMSPI Utils Tool Group.

## Task 10: 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 HPOM Operational UI, right-click the desired node. Select **Start** → **HP Storage Essentials SRM** → **HP SE SRM SPI Utils** → **Import SE SRM Infrastructure**.

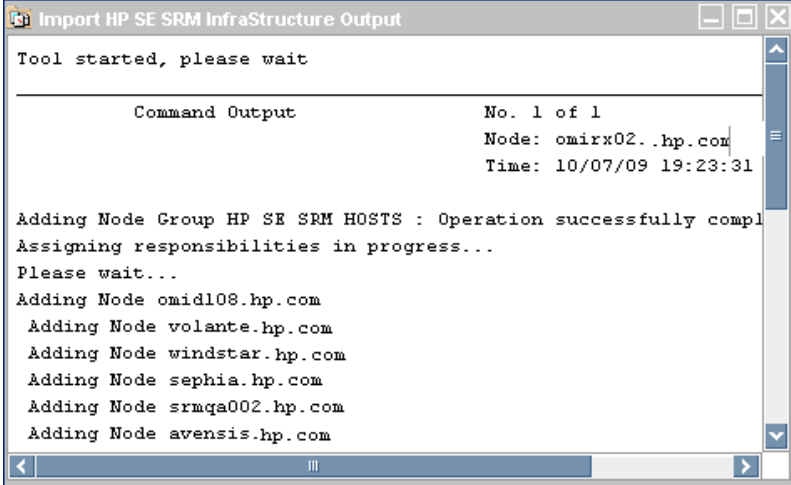
A terminal window opens and all Fabrics and corresponding Hosts, Switches, and Storage systems managed by SE will be added to the HPOM as message allowed nodes. If any of the Host, Switch, and Storage System does not belong to any fabric, it is not added to the Node Bank.

The new node groups have the following naming conventions:

<FABRICNAME>-<SE SRM CMS>-HP SE SRM STORAGESYSTEMS

<FABRICNAME>-<SE SRM CMS>-HP SE SRM HOSTS

<FABRICNAME>-<SE SRM CMS>-HP SE SRM SWITCHES



```
Import HP SE SRM InfraStructure Output
Tool started, please wait

Command Output                               No. 1 of 1
Node: omirx02..hp.com
Time: 10/07/09 19:23:31

Adding Node Group HP SE SRM HOSTS : Operation successfully compl
Assigning responsibilities in progress...
Please wait...
Adding Node omid108.hp.com
Adding Node volante.hp.com
Adding Node windstar.hp.com
Adding Node sephia.hp.com
Adding Node srmqa002.hp.com
Adding Node avensis.hp.com
```

## 2 Click **Enter** and the command prompt window closes.



```
Import HP SE SRM InfraStructure Output
Tool started, please wait

Command Output                               No. 1 of 1
Node: omirx05.ind.hp.com
Time: 10/30/09 09:43:44

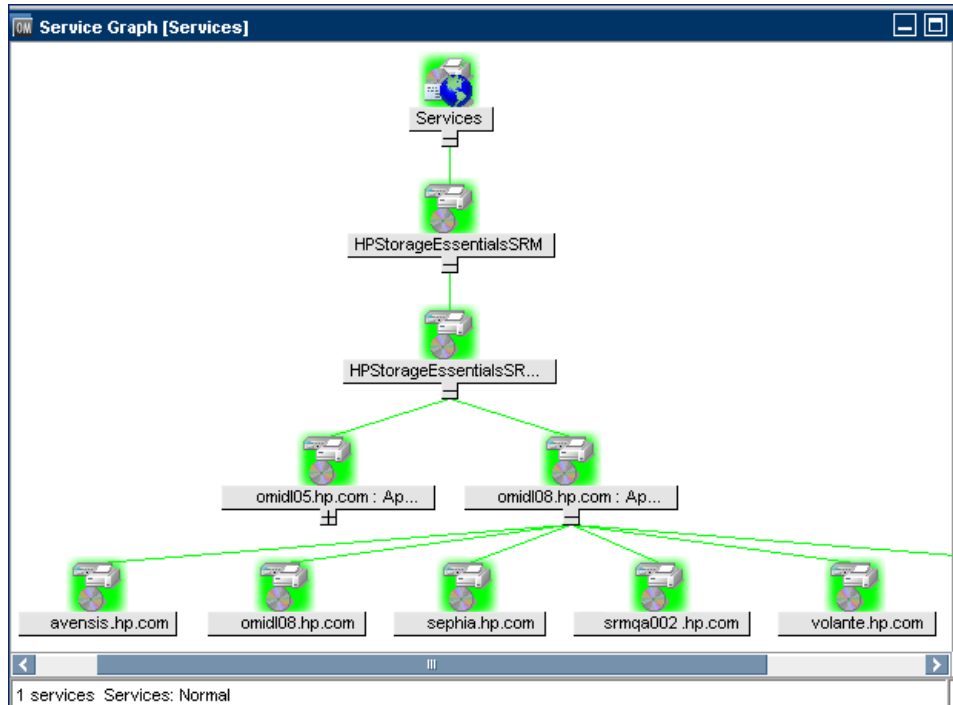
Adding Node Group HP SE SRM HOSTS : Operation successfully completed.
Assigning responsibilities in progress...
Please wait...
Adding Node volante.ind.hp.com : Operation successfully completed.
Adding Node windstar.ind.hp.com : Operation successfully completed.
Adding Node saphia.ind.hp.com : Operation successfully completed.
Adding Node srmqa002.ind.hp.com : Operation successfully completed.
Adding Node avensis.ind.hp.com : Operation successfully completed.
Adding Node Group HP SE SRM SWITCHES : Operation successfully completed.
Assigning responsibilities in progress...
Please wait...
Adding Node logan : Operation successfully completed.
Adding Node srmqa028 : Operation successfully completed.
Adding Node jaguarxk : Operation successfully completed.
Adding Node athena : Operation successfully completed.
Adding Node bluebird : Operation successfully completed.
Adding Node optima : Operation successfully completed.
Adding Node deville : Operation successfully completed.
Adding Node volvo : Operation successfully completed.
Adding Node toyopet : Operation successfully completed.
Adding Node Group HP SE SRM STORAGE SYSTEMS : Operation successfully completed.
Assigning responsibilities in progress...
Please wait...
Adding Node spark : Operation successfully completed.
Adding Node ZOOM : Operation successfully completed.
Adding Node [34] Emulex PPN-10:00:00:00:C9:52:1E:2E : Operation successfully completed.
Adding Node [49] UNIX (emx0) FCA-2684 S/W Rev 2.25: F/W Rev 1.90a4 : Operation successfu
Adding Node [11] modena_fcd0 : Operation successfully completed.
Adding Node [34] Emulex PPN-10:00:00:00:C9:5D:A2:EA : Operation successfully completed.
Adding Node [56] FCB0 (0x23121077) DIABLO (1025) 3.3.18446744073709551527 : Operation su
Adding Node [57] FCB0 (0x23121077) SASSOU (65533) 3.3.18446744073709551530 : Operation s
Adding Node [56] FGA0 (0x23121077) DIABLO (1025) 3.3.18446744073709551527 : Operation su
Adding Node [34] Emulex PPN-10:00:00:00:C9:4C:E0:22 : Operation successfully completed.
Adding Node [57] FGA0 (0x23121077) CALAIS (65531) 3.3.18446744073709551530 : Operation s
Adding Node [11] touran_fcd1 : Operation successfully completed.
Adding Node [34] Emulex PPN-10:00:00:00:C9:52:1E:2D : Operation successfully completed.
```



- 1 In order to delete the HPSESRMSPI Infrastructure node groups and the nodes that they contain, run the tool “Clean HP SE SRM Infrastructure” on the SE CMS node.
- 2 If a host already exists in HP SE SRM INFRA and becomes a HPOM managed node, then all the new events are mapped to the HPOM managed node only. You have to delete the node manually using HPOM node editor from HP SE SRM INFRA. This will help you to identify the node that get events.

# Task 11: Set Up Service Discovery

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 Tool Group on the Storage Essentials SRM CMS node. Setting up service discovery is mandatory while you perform the configuration.





# 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:

- HP SE SRM CIM Ext-Unix
- HP SE SRM CIM Ext-Win
- HP SE SRM CMS-Unix
- HP SE SRM CMS-Win

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

**Table 10 List of node groups and their corresponding tools group**

<b>Node Groups</b>	<b>Tools Groups</b>
HP SE SRM CMS-Unix	AppStorManager-Unix
HP SE SRM CMS-Win	AppStorManager-Win
HP SE SRM CIM Extn-Unix	CIM Extension-Unix
HP SE SRM CIM Extn-Win	CIM Extension-Win

## Using HP Storage Essentials SRM SPI Tools

The HP Storage Essentials SRM SPI adds the top-level tool group HP Storage Essentials SRM in the HPOM. The following tools are available in the HP Storage Essentials SRM tool group:

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



Running the Storage Essentials SRM SPI tools on the HPOM Operational GUI console by selecting a node on service view is not supported. To run the tools on the HPOM Operational GUI, select node among the nodes on Operational GUI 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 tools to function properly.

## Using the AppStorManager Tool Group



The **AppStorManager** tools group includes tools that monitor the HP Storage Essentials SRM AppStorManager services and the tools that control the forwarding of events from SESRM CMS to HPOM on selected UNIX or Windows nodes.

The AppStorManager-Unix and AppStorManager-Win Tools group contains the following tools.







### Elements in Tool Group "AppStorManager-Unix"




[/ Tool Bank](#) / [HPSESPI:StorageEssentials Tools](#) / [HPSESPI:AppStorManager-Unix](#)

Tools for HP Storage Essentials SRM AppStorManager on Unix nodes

Details **AppStorManager-Unix**  Filter 

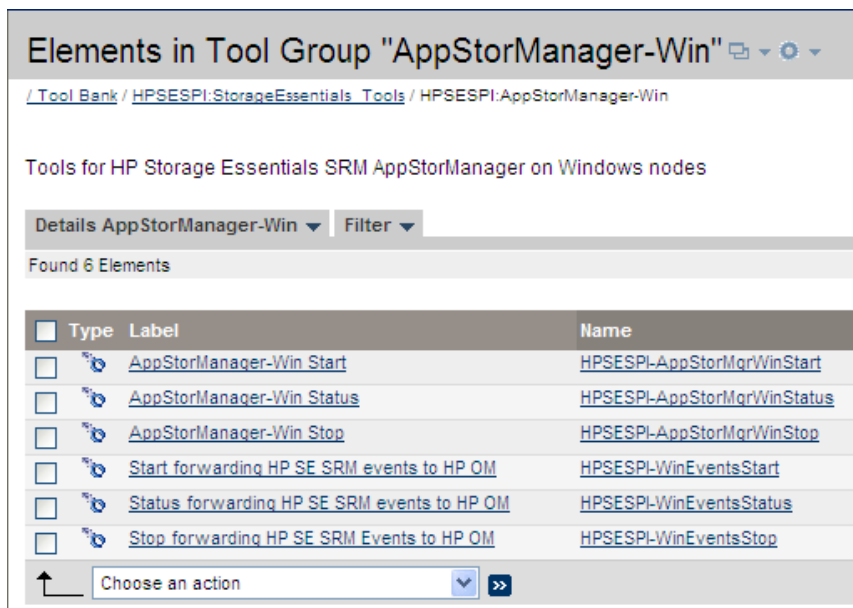
Found 6 Elements

<input type="checkbox"/>	Type	Label	Name
<input type="checkbox"/>		<a href="#">AppStorManager-Unix Start</a>	<a href="#">HPSESPI-AppStorMgrUnixStart</a>
<input type="checkbox"/>		<a href="#">AppStorManager-Unix Status</a>	<a href="#">HPSESPI-AppStorMgrUnixStatus</a>
<input type="checkbox"/>		<a href="#">AppStorManager-Unix Stop</a>	<a href="#">HPSESPI-AppStorMgrUnixStop</a>
<input type="checkbox"/>		<a href="#">Start forwarding HP SE SRM Events to HP OM</a>	<a href="#">HPSESPI-UnixEventsStart</a>
<input type="checkbox"/>		<a href="#">Status forwarding HP SE SRM events to HP OM</a>	<a href="#">HPSESPI-UnixEventsStatus</a>
<input type="checkbox"/>		<a href="#">Stop forwarding HP SE SRM Events to HP OM</a>	<a href="#">HPSESPI-UnixEventsStop</a>

 Choose an action  

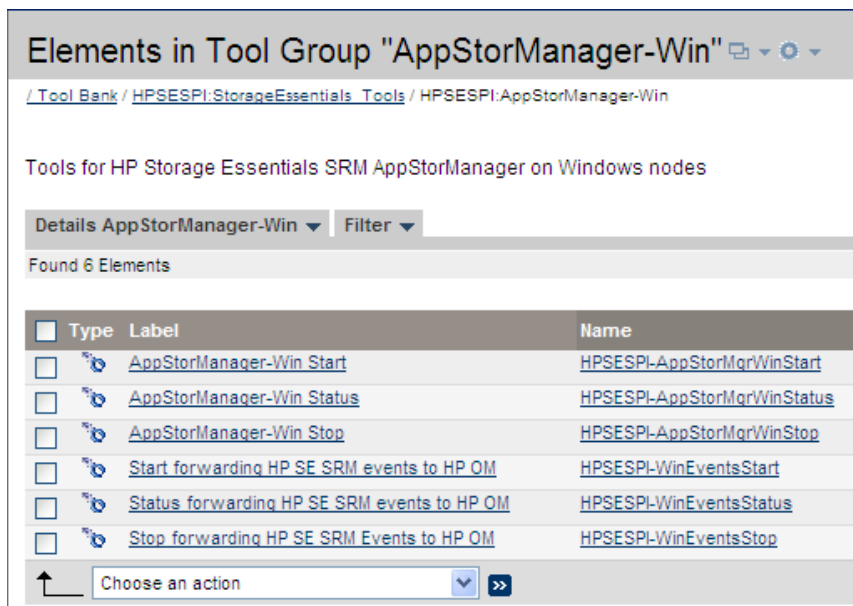
**Table 11 List of UNIX Tools in AppStorManager tool group**

<b>Tools Group</b>	<b>Tool Name</b>	<b>Description</b>
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.
	Start forwarding HP SE SRM events to HPOM	Forwards the HP SE SRM events from SE CMS node to HPOM
	Stop forwarding HP SE SRM Events to HPOM	Stops forwarding the HP SE SRM events from SE CMS node to HPOM
	Status forwarding HP SE SRM events to HPOM	Status forwarding of the HP SE SRM events from SE CMS node to HPOM



**Table 12 List of Windows Tools in AppStorManager tool group**

Tools Group	Tool 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.



**Table 12 List of Windows Tools in AppStorManager tool group**

Tools Group	Tool Name	Description
	Start forwarding HP SE SRM events to HPOM	Forwards the HP SE SRM events from SE CMS node to HPOM
	Stop forwarding HP SE SRM Events to HPOM	Stops forwarding the HP SE SRM events from SE CMS node to HPOM
	Status forwarding HP SE SRM events to HPOM	Status forwarding of the HP SE SRM events from SE CMS node to HPOM

## Using the CIM Extension Tool Group

The **CIM Extension-Unix** or **CIM Extension-Win** tools group includes tools 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 tools group window.

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

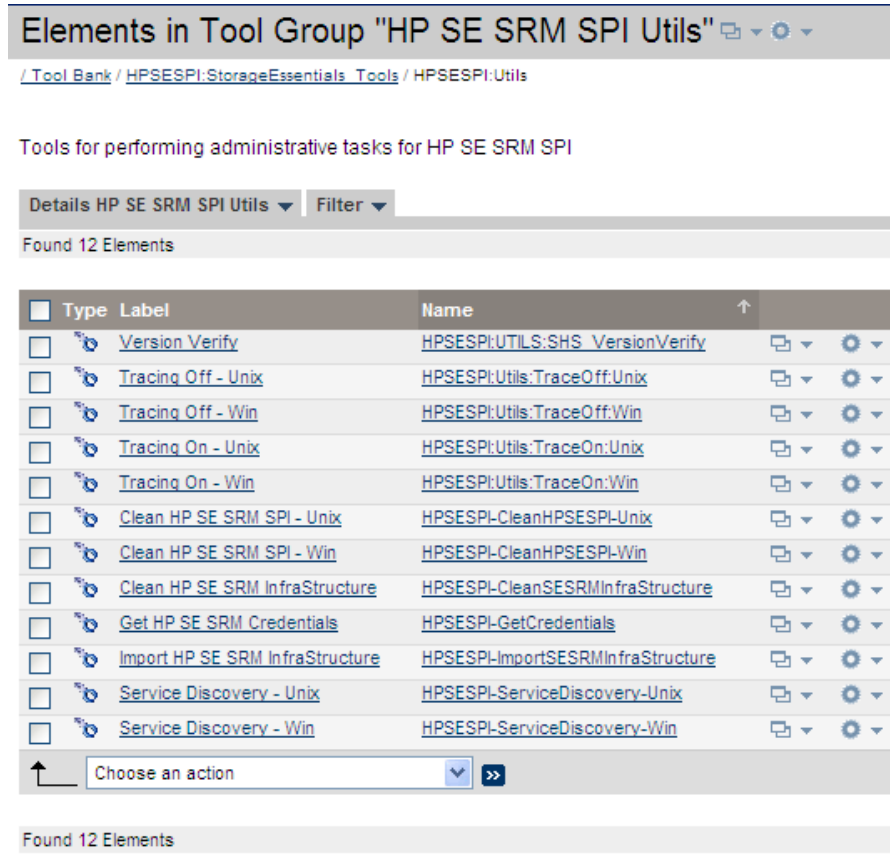
The CIM Extension tools group contains the following tools.

**Table 13 List of Tools in CIM Extension tool group**

<b>Tool Group</b>	<b>Tool Name</b>	<b>Description</b>
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
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 Tool Group

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



The screenshot displays the 'Elements in Tool Group "HP SE SRM SPI Utils"' interface. It features a breadcrumb trail: / Tool Bank / HPSESPi:StorageEssentials\_Tools / HPSESPi:Utils. Below this, it states 'Tools for performing administrative tasks for HP SE SRM SPI'. A control bar includes 'Details HP SE SRM SPI Utils' and a 'Filter' dropdown. A status bar indicates 'Found 12 Elements'. The main content is a table with columns for 'Type', 'Label', 'Name', and an upward arrow. Each row contains a checkbox, a mouse icon, a label, a name, and a set of icons (document, gear, and dropdown). At the bottom, there is an action bar with an upward arrow, a dropdown menu labeled 'Choose an action', and a double-right arrow button. A final status bar at the bottom shows 'Found 12 Elements'.

<input type="checkbox"/>	Type	Label	Name	↑
<input type="checkbox"/>		<a href="#">Version Verify</a>	<a href="#">HPSESPi:UTILS:SHS_VersionVerify</a>	
<input type="checkbox"/>		<a href="#">Tracing Off - Unix</a>	<a href="#">HPSESPi:Utils:TraceOff:Unix</a>	
<input type="checkbox"/>		<a href="#">Tracing Off - Win</a>	<a href="#">HPSESPi:Utils:TraceOff:Win</a>	
<input type="checkbox"/>		<a href="#">Tracing On - Unix</a>	<a href="#">HPSESPi:Utils:TraceOn:Unix</a>	
<input type="checkbox"/>		<a href="#">Tracing On - Win</a>	<a href="#">HPSESPi:Utils:TraceOn:Win</a>	
<input type="checkbox"/>		<a href="#">Clean HP SE SRM SPI - Unix</a>	<a href="#">HPSESPi-CleanHPSESPi-Unix</a>	
<input type="checkbox"/>		<a href="#">Clean HP SE SRM SPI - Win</a>	<a href="#">HPSESPi-CleanHPSESPi-Win</a>	
<input type="checkbox"/>		<a href="#">Clean HP SE SRM InfraStructure</a>	<a href="#">HPSESPi-CleanSESRMInfraStructure</a>	
<input type="checkbox"/>		<a href="#">Get HP SE SRM Credentials</a>	<a href="#">HPSESPi-GetCredentials</a>	
<input type="checkbox"/>		<a href="#">Import HP SE SRM InfraStructure</a>	<a href="#">HPSESPi-ImportSESRMInfraStructure</a>	
<input type="checkbox"/>		<a href="#">Service Discovery - Unix</a>	<a href="#">HPSESPi-ServiceDiscovery-Unix</a>	
<input type="checkbox"/>		<a href="#">Service Discovery - Win</a>	<a href="#">HPSESPi-ServiceDiscovery-Win</a>	

The HPSESRMSPI Utils tool group consists of the following tools.

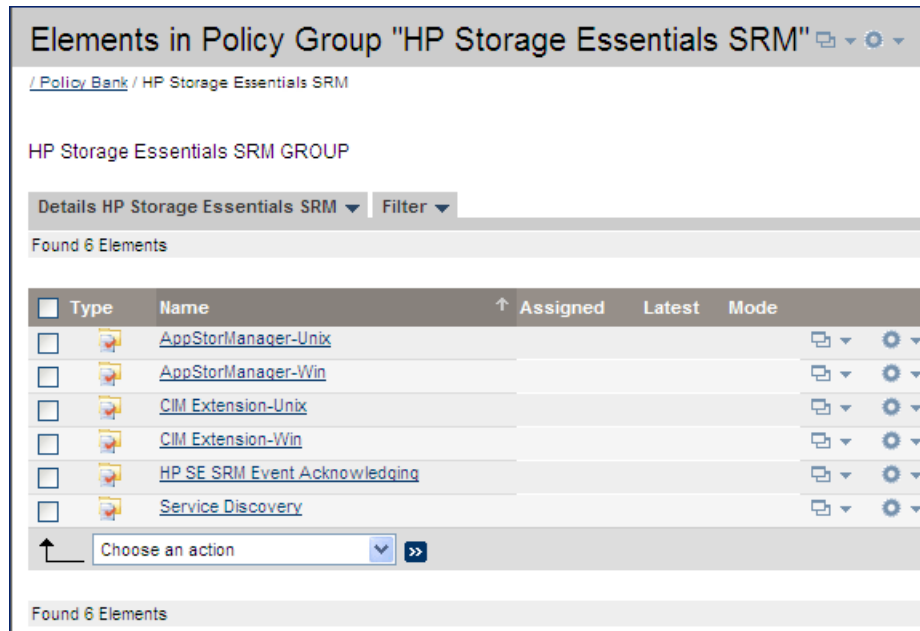


**Table 14 List of tools in HPSESRMSPI Utils tool group**

<b>Tool Name</b>	<b>Description</b>
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 SE SRM Credentials	Gets the username and password for HPSESRM.
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 SE SRM Credentials tool must be executed before running this tool.
Clean HP SE SRM InfraStructure	Deletes the HP SE SRM infrastructure nodes from the HPOM nodes

# Using the HP Storage Essentials SRM SPI Policy Groups

Policies are grouped under the HP Storage Essentials SRM policy group.



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

Monitor policies 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 policy that is used for Service Discovery. Deployment of this policy on the HPOM management server enables the HP Storage Essentials SRM SPI to discover the Storage Essentials Service views.

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

**Table 15 List of default policies provided with the HP Storage Essentials SRM SPI**

<b>Policy Group</b>	<b>Policy Name</b>	<b>Description</b>	<b>Policy Type</b>
CIM Extension-Unix	HPSESRMSPI-CI M_Extension-Unix	Monitors HP Storage Essentials SRM CIM Extension on Unix	Monitor
CIM Extension-Win	HPSESRMSPI-CI M_Extension-Win	Monitors HP Storage Essentials SRM CIM Extension on Windows	Monitor
AppStorManag er-Unix	HPSESRMSPI-App StorManager-Un ix	Monitors HP Storage Essentials SRM AppStorManager service on Unix	Monitor
	HPSESRMSPI-HP SESRM_Events-U nix	Forwards HP SE SRM events from Unix nodes to HP OM	Monitor
AppStorManag er-Win	HPSESRMSPI-App StorManager-Wi n	Monitors HP Storage Essentials SRM AppStorManager service on Windows	Monitor
	HPSESRMSPI-HP SESRM_Events-W in	Forwards HP SE SRM events from Windows nodes to HPOM	Monitor
Service Discovery	HPSESRMSPI-Sto rage_Essentials_S RM_Services	HP Storage Essentials SRM Service Discovery on Unix nodes	AutoDiscovery
HP SE SRM Event Acknowledging	HPSESRMSPI_H PSESRM-ClearEv ents	Clears the events on HP Storage Essentials SRM when it is acknowledged on HPOM	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 policy 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 policies 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 HPOM Message Browser window with messages generated by the HP Storage Essentials SRM SPI.

Severity	Dup.	SUI&ONE	Time Received	Node	Application	MsgGrp	Object
Normal		-----X-	08:59:56 09/29/09	omirx02...	opccsad	Certificate	CertDeploy...
Warning		-X-----	09:13:10 09/29/09	omirx02...	Storage Essent...	HPSESRMSPI...	xterm
Warning		-X-----	09:14:58 09/29/09	omirx02...	Storage Essent...	HPSESRMSPI...	xterm
Warning		--X----	10:00:39 09/29/09	omirx02...	HP Operations ...	OpC	opcmsgm (...)
Warning		--X----	10:03:36 09/29/09	omirx02...	HP Operations ...	OpC	opcmsgm (...)
Warning		--X----	10:25:43 09/29/09	omirx02...	HP Operations ...	OpC	opcmsgm (...)
Warning		--X----	10:28:41 09/29/09	omirx02...	HP Operations ...	OpC	opcmsgm (...)
Warning		--X----	13:01:11 10/01/09	omirx02...	opccsad	Certificate	CertDeploy...
Warning		--X----	13:17:09 10/01/09	omirx02...	opccsad	Certificate	CertDeploy...
Critical		-X-----	15:13:57 09/29/09	omirx02...	HP Operations ...	OpC	Licensing
Critical		-X-----	15:14:01 09/29/09	omirx02...	HP Operations ...	OpC	Licensing
Critical		-X-----	15:14:06 09/29/09	omirx02...	HP Operations ...	OpC	Licensing
Critical		-X-----	15:13:58 09/30/09	omirx02...	HP Operations ...	OpC	Licensing
Critical		-X-----	15:14:02 09/30/09	omirx02...	HP Operations ...	OpC	Licensing
Critical		-X-----	15:14:07 09/30/09	omirx02...	HP Operations ...	OpC	Licensing
Critical		-X-----	15:13:58 10/01/09	omirx02...	HP Operations ...	OpC	Licensing

36 of 27 0 0 8 1 0 0 0 0

All Active Messages  Filtered Active Messages

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

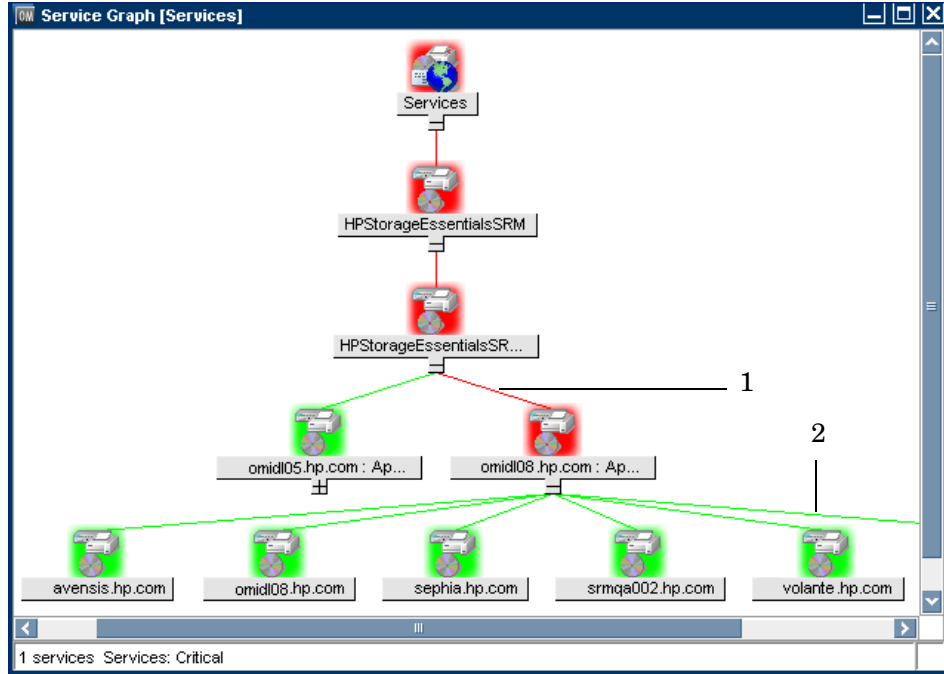
# Using the HP Storage Essentials SRM SPI Service View

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 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 policies must be installed or not. If the nodes in this tree are HPOM managed nodes with the Storage Essentials policies 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.

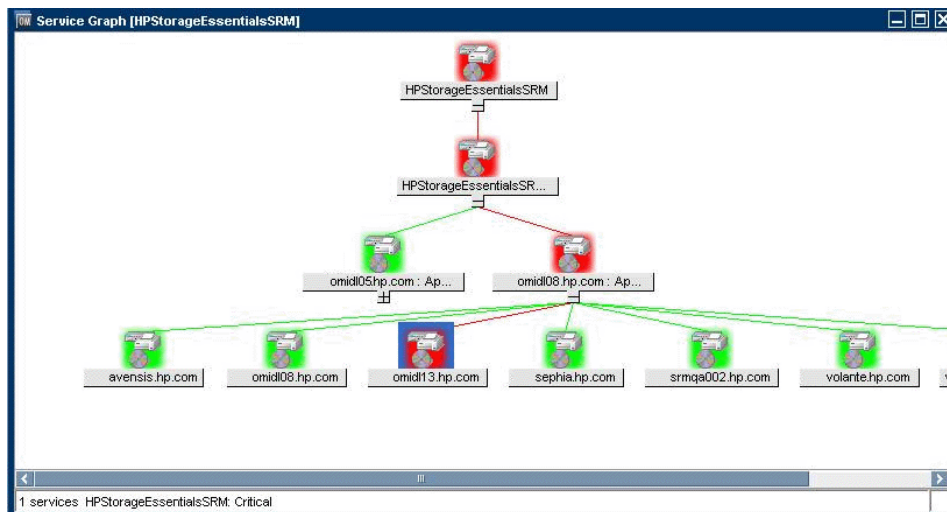


Legend:

- 1 Storage Essentials CMS node
- 2 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.

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

The HP Storage Essentials SRM SPI services are by default assigned to `hpsesrmspi_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> HPSESPI:HPStorageEssentials
```

## Viewing Services

The service views are created after Storage Essentials CMS is added to an **AppStorManager-Unix** or **AppStorManager-Win** node group and service discovery is invoked. See [Task 11: Set Up Service Discovery](#) on page 48 for instructions to run service discovery through tools or policies.

For information on adding Storage Essentials CMS to the **AppStorManager-Unix** or **AppStorManager-Win** node group, see [Task 3: Add Nodes to the HP Storage Essentials SRM Node Groups](#) on page 30.

You must manually deploy the policies on the HPOM management server or run the appropriate **Service Discovery** tool 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 9: Obtain HP Storage Essentials SRM CMS credentials](#) on page 43 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 **HPOM Operational GUI**.
- 2 Select **Services > HPStorageEssentialsSRM** on the left pane.
- 3 Right-click **HPStorageEssentialsSRM** 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 policies 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 policy. The modified discovery period takes effect only after the policies are redeployed on the HPOM management server node.

# Reconfiguring HP SE SRM CMS Credentials for the HP Storage Essentials SRM SPI

To reconfigure HP SE SRM CMS credentials, enter the new HP Systems Insight Manager CMS Credentials. For more information, see [Task 9: 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 Policies from the HPOM Managed Nodes

Follow these steps:

- 1 Start the HPOM Administrator GUI.
- 2 From the HPOM Administrator GUI, select the nodes from which the policies are to be removed.
- 3 From the Browse menu, choose the “effective policy assignments”. Select the policies that are to be removed and delete the same.

After you remove the Storage Essentials SRM SPI policies 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 Elements from the Managed Nodes

Follow these steps:

- 1 From the HPOM Operational UI, right-click the desired nodes.
- 2 Select Start HP Storage Essentials SRM HP SE SRM SPI Utils HPSE SRM SPI-Unix or Clean HP SE SRMSPI-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 the desired node group in the Administrator GUI.
- 2 Select all desired nodes.
- 3 From the action menu, choose De-Assign from this Node Group.

# Removing Storage Essentials SRM SPI Policies from the HPOM Management Server Node

Follow these steps:

- 1 Choose the HPOM node from the node bank in the Administrator GUI.
- 2 From the Browse menu, choose Effective Policy Assignments.
- 3 Select the required policies and delete it.

The screenshot displays the 'Effective Policy Assignments for Node "omirx01.hp.com"' interface. At the top, there is a search bar with 'Details omirx01.hp.com' and a 'Filter' dropdown. Below this, it states 'Found 4 Elements'. The main content is a table with columns for 'Node (group)', 'Assignment', and 'Policy (group)'. The 'Assignment' column is further divided into 'Mode', 'Direct', 'via NG', and 'via PG'. The 'Policy (group)' column includes a checkbox, a policy name, and a 'Version' column.

Node (group)	Assignment	Policy (group)	Version			
Mode	Direct	via NG	via PG			
<input type="checkbox"/> omirx01.hp.com (omirx01.hp.com)	fix	✓	-	-	<input checked="" type="checkbox"/> HPSESRM/SPI HPSESRM-ClearEvents	3.3
	latest	-	-	✓	<input type="checkbox"/> distrib_mon	9.0
	latest	-	-	✓	<input type="checkbox"/> mondb_file	9.0
	latest	-	-	✓	<input type="checkbox"/> opcmag(119)	9.0

At the bottom of the table, there are two 'Choose an action' dropdown menus with a right-pointing arrow icon.

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

This section describes how to perform a complete de-install of the HP SE 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
```

## 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
```

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



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

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



# 6 Troubleshooting

## Self-Healing Info Application

The Self-Healing Info application included with each Smart Plug-in can be run on the managed node to gather error message-specific and other relevant data. This data is stored in a compressed file that you can send to HP support for assistance. Please see the documentation specific to your Smart Plug-in for the Self-Healing Info application location and use.

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 31.
- 4 Make sure that the Storage Essentials SRM SPI policies 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 policies are disabled on this node. Enable it or redeploy the monitor policy to the managed node. This situation can arise when the monitor policy was deployed to the node before installation of HP Storage Essentials SRM CMS or CIM Extension and the monitor policy 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 SE SRM 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 9: Obtain HP Storage Essentials SRM CMS credentials](#) on page 43.
- If there are multiple Storage Essentials CMS nodes with different credentials, the Get HP SE SRM CMS Credentials tool 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 Policies at **Message Source Templates > HP Storage Essentials SRM > Service Discovery** are deployed on the HPOM management server node.
- After the Service Discovery tool 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 SE SRM 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 SE SRM Credentials tool and then run the Service Discovery application.



# A Tools

## 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:

Lynx:

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

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

Lynx:

```
/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 tool is only applicable for the service discovery module of Storage Essentials SRM SPI

# HP Storage Essentials SRM Tool Group

The HP Storage Essentials SRM SPI adds the top-level tool group HP Storage Essentials SRM in the HPOM Tool bank window. The following tools are available in the HP Storage Essentials SRM tool group:

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



# AppStorManager Tool Groups

The AppStorManager tool group contains the following tools.

**Table 16 List of tools in AppStorManager tool groups**

<b>Tool Group</b>	<b>Tool Name</b>	<b>Description</b>
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.
	Start forwarding HP SE SRM Events to HPOM	Forwards the HP SE SRM events from Unix managed node to HPOM
	Status forwarding HP SE SRM events to HPOM	Provides status of forwarding the HP SE SRM events from Unix managed node to HPOM
	Stop forwarding HP SE SRM Events to HPOM	Stops forwarding the HP SE SRM events from Unix managed node to HPOM
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.

<b>Tool Group</b>	<b>Tool Name</b>	<b>Description</b>
	Start forwarding HP SE SRM Events to HPOM	Forwards the HP SE SRM events from Windows managed node to HPOM
	Status forwarding HP SE SRM events to HPOM	Provides status of forwarding the HP SE SRM events from Windows managed node to HPOM
	Stop forwarding HP SE SRM Events to HPOM	Stops forwarding the HP SE SRM events from Windows managed node to HPOM

## CIM Extension Tool Groups

The CIM Extension tool groups contain the following tools.

**Table 17 List of tools in CIM Extension tool groups**

<b>Tool Group</b>	<b>Tool Name</b>	<b>Description</b>
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 policy 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 Tool Group

The HPSESRMSPI Utils tool group contains the following tools.

**Table 18 List of tools in HPSESRMSPI Utils tool group**

<b>Tool Group</b>	<b>Tool Name</b>	<b>Description</b>
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 SE SRM Credentials	Gets the user name and password of HP SE SRM 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 Off - Win	Sets the HP SE SRM SPI tracing to OFF state on Windows managed nodes
	Tracing On-Unix	Sets the Storage Essentials SRM SPI tracing to ON state on the Unix managed nodes.
	Tracing On - Win	Sets the HP SE SRM SPI tracing to ON state on the Windows managed nodes
	Import HP SE SRM InfraStructure	Queries HP SE SRM infrastructure details and adds hosts, switches and storage systems to the Node Bank
	Clean HP SE SRM InfraStructure	Clean HP SE SRM infrastructure on the Node
Version Verify	Verifies the version of Storage Essentials SRM SPI files on the managed nodes.	



## B Policies

Policies provided with the Storage Essentials SRM SPI are grouped under the **HP Storage Essentials SRM** policies group. The following default policies are provided with the HP Storage Essentials SRM SPI policy groups.

**Table 19 List of default policies provided with the HP Storage Essentials SRM SPI policy groups**

<b>Policy Group</b>	<b>Policy Name</b>	<b>Description</b>	<b>Policy Type</b>
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
	HPSESRMSPI-HPSESRM_Events-Unix	Forwards and acknowledges the HP SE SRM Events to HPOM.	Open Message Interface Policy

<b>Policy Group</b>	<b>Policy Name</b>	<b>Description</b>	<b>Policy Type</b>
AppStorManager-Win	HPSESRMSPI-AppStorManager-Win	Monitors HP Storage Essentials SRM AppStorManager service on Windows	Monitor
	HPSESRMSPI-HPSESRM_Events-Win	Forwards and acknowledges the HP SE SRM Events to HP OM.	Open Message Interface Policy
Service Discovery	HPSESRMSPI-Storage_Essentials_SRM_Services	HP Storage Essentials SRM Service Discovery on nodes	Scheduled



# Index

## A

- application group
  - AppStorManager, 81
  - CIM Extension, 55, 83
  - HPSESRMSPI, 84
  - HPSESRMSPI Utils, 56

## C

- chargeback, 10
- CIM, 10
- command
  - HP Storage Essentials SRM, 26
  - swinstall, 21
  - to generate the HPSESRMSPI.su file, 36
  - to get the value for \$CIMExtPath, 37
  - to install the HP Storage Essentials SRM SPI, 21

## D

- DMTFs, 10

## H

- HPOM, 61
  - administrator, 28
  - Java console, 50
  - management server, 17
  - message browser, 75
- HP SE SRM
  - credentials, 77

- HP Storage Essentials SRM, 9, 66, 80
  - CMS, 79
  - CMS node, 58
  - Service Discovery policies, 66
  - service map, 66
  - services, 66
  - SPI, 20, 56, 61, 63, 65, 72, 75, 80
    - policy groups, 87
    - services, 65

## M

- management
  - Backup, 10
  - NAS, 10
  - Performance, 10
  - Soft Quota, 9
  - Utilization, 9
- message group
  - HPSESRMSPI-StorageEssentials\_SRM, 61
- MIBs, 10
- MIFs, 10

## N

- Node, 61

## P

- policies
  - monitor, 58

- policy
  - monitor
    - HPSESRMSPI-CIM\_Extension-Win,  
60
    - Service Discovery, 58

## **R**

- requirements
  - disk space, 16
  - software, 17
- rules
  - calculation, 65
  - propagation, 65

## **S**

- Service Discovery, 13, 44
- service monitoring, 76
- SNMPs, 10

## **T**

- Tracing
  - Off-Unix, 79
  - On-Unix, 79

## **V**

- viewing services, 66
- visualization, 9

## **W**

- WBEM, 10

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