

HP Operations Smart Plug-in for HP Storage Essentials SRM

for HP Operations Manager for Windows®

Software Version: 2.00

Installation and Configuration Guide

Document Release Date: December 2009

Software Release Date: December 2009



Legal Notices

Warranty

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

Restricted Rights Legend

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Copyright Notices

© Copyright 2008-2009 Hewlett-Packard Development Company, L.P.

Trademark Notices

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

RedHat Linux is a trademark of Red Hat, Inc.

UNIX® is a registered trademark of The Open Group.

Documentation Updates

This guide's title page contains the following identifying information:

- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

To check for recent updates, or to verify that you are using the most recent edition of a document, go to:

<http://h20230.www2.hp.com/selfsolve/manuals>

This site requires that you register for an HP Passport and sign-in. To register for an HP Passport ID, go to:

<http://h20229.www2.hp.com/passport-registration.html>

Or click the **New users - please register** link on the HP Passport login page.

You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

Support

You can visit the HP Software Support web site at:

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

This web site provides contact information and details about the products, services, and support that HP Software offers.

HP Software Support Online provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the HP Software Support web site to:

- Search for knowledge documents of interest
- Submit and track support cases and enhancement requests
- Download software patches
- Manage support contracts
- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
- Research and register for software training

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract.

To find more information about access levels, go to:

http://h20230.www2.hp.com/new_access_levels.jsp

To register for an HP Passport ID, go to:

<http://h20229.www2.hp.com/passport-registration.html>

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
	Installation Requirements	15
	Standard Installation of SPI Components on an HPOM 8.10 Server	15
	Standard Installation on Remote Consoles	15
	Standalone HP Reporter and HP Performance Manager	15
	Installation Prerequisites	16
	Hardware Requirements	16
	Disk Space Requirements	16
	Software Requirements	17
	HPOM Management Server Versions	18
	HP SE SRM CMS Versions	18
	CIM Extension and HPOM Agent Versions	19
	Installing the HP Storage Essentials SRM SPI	20
	Verifying Installation	24
	Installed File Locations	25
3	Configuring the HP Storage Essentials SRM SPI	27
	Task 1: Install the HPOM Agent on Nodes	27
	Task 2: Assign Nodes to the HP SE SRM Node Group	27
	Assigning the AppStorManager Node to the Node Group	27
	Task 3: Obtain HP SE SRM Credentials	33
	Task 4: Import HP SE SRM Infrastructure	36
	Task 5: Configure the HPOM Agent for a Non-root User	40

Providing Access to HP Storage Essentials SRM SPI Applications	41
Task 6: Configuring the HP SE SRM SPI to forward HP SE SRM events to HPOM . . .	42
Specifying a Filter for Events forwarded from Storage Essentials to HPOM	42
Enable event forwarding from HP SE SRM CMS to HPOM	45
Task 7: Configuring Event Acknowledgement from HP SE SRM CMS to HPOM	48
Task 8: Configuring Event Clearing from HPOM to HP SE SRM CMS	48
Task 9: Reconfigure HP SE SRM CMS Credentials for HP SE SRM SPI	50
4 Using the HP Storage Essentials SRM SPI	51
Using the HP SE SRM SPI Policies	51
Using the HP Storage Essentials SRM SPI Node Group	52
Using HP Storage Essentials SRM SPI Tools	54
Using the AppStorManager Tools Group	55
Using CIM Extension Tools Group	58
Using the HP SE SRM SPI Utils Tools Group	59
Using HP Storage Essentials SRM SPI messages	61
Launching the HP SE SRM CMS Web Portal from the Message Browser	63
Using the HP Storage Essentials SRM SPI Service Map	64
Viewing Services	66
Importing SE Infrastructure into HPOM NodeBank	68
Using HP Storage Essentials SRM SPI User Roles	69
5 Uninstalling the HP Storage Essentials SRM SPI	71
Deleting HP Storage Essentials SRM SPI Instrumentation from Nodes	71
Removing Nodes from the Node Group	71
Task 1: Remove the AppStorManager Node from the Node Group	71
Task 2: Remove the CIM Extension Windows Node from the Node Group	73
Uninstalling HP Storage Essentials SRM SPI from HPOM	76
Uninstalling HP Storage Essentials SRM SPI Components from HPOM	78
Removing HP Storage Essentials SRM SPI User Roles	78
6 Troubleshooting	79
Error Messages and Solutions	79
No HP SE SRM service monitoring events arrive on the HPOM Message Browser console	79
HP SE SRM services are not visible in the HPOM console	80

SHS-related tools fail on non-root HTTPS node; says cannot open SPI_SE.xml	80
Enable logging for event forwarding	81
A HP Storage Essentials SRM SPI Policy Groups	83
Index	85

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.

- **End-to-end visibility of business applications**

Provides an interface to monitor business applications, including their associated infrastructure and interdependencies.

- **Web-based global management console**

Manages heterogeneous storage environments through a web-based user interface.

- **Reporting**

Offers flexible, in-depth report generation in both predefined and user-defined formats. It can also export data to other management applications.

- **Standards-based architecture**

Protects user flexibility and investments with a standards-based interface for managing heterogeneous storage environments.

- **Storage server, network, and subsystem provisioning**

Reduces manual processes and risk of downtime caused by free-space outages with multi-level storage provisioning.

- **Integrated storage management**

Lowers cost of acquiring and managing a heterogeneous storage environment by using multiple disparate point solutions.

You can find more information on 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 SE SRM CMS and HP SE SRM-managed hosts CIM Extension services.

- **Service and process monitoring**

Monitors the availability of the HP SE SRM CMS and HP SE SRM 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 SE 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 a tool to import the SE SRM Infrastructure elements to the HPOM Node Bank.

2 Installing the HP Storage Essentials SRM SPI

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

Installation Requirements

Standard Installation of SPI Components on an HPOM 8.10 Server

By using the HP Operations Smart Plug-ins DVD you can select to install only HP Storage Essentials SRM SPI package and not the reporter and graphing packages. However, if the full version of Reporter or Performance Manager is installed on the same system, the corresponding packages can be installed or uninstalled on the HPOM server.

Standard Installation on Remote Consoles

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

Standalone HP Reporter and HP Performance Manager

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

Installation Prerequisites

For the HP Storage Essentials SRM SPI to run properly, your system must meet the requirements described in this section.

Hardware Requirements

The following documents explain all the hardware requirements:

- For the HPOM 8.10:
HP Operations Manager for Windows Installation Guide
- For the HPOM 8.10 HTTPS managed nodes:
HP Operations Manager HTTPS Agent Concepts and Configuration Guide

Disk Space Requirements

Table 1 Disk space requirements

System	Operating System	Installation	Runtime Files	Total
HPOM management server 8.10	Windows 2008 EE (32-bit) Windows 2003 R2 (32-bit)	4 MB	1 MB	5 MB

System	Operating System	Installation	Runtime Files	Total
HPOM managed node	HP-UX 11.11	1 MB	1 MB	2 MB
	HP-UX 11.23 IA			
	HP-UX 11.23 PA			
	HP-UX 11.31 PA			
	HP-UX 11.31 IA			
	Solaris 8, 9,10			
	RedHat Linux Advanced Server 4.0 (32-bit and 64-bit)			
	RedHat Linux Advanced Server 5.0 (32-bit)			
	SuSE Linux Enterprise Server 9 (32-bit and 64-bit)			
	SuSE Linux Enterprise Server 10 (32-bit)			
AIX 5.1, 5.2, and 5.3				
Tru64 5.1B				
Microsoft Windows 2003 (32-bit and 64-bit)	Microsoft Windows 2003 (32-bit and 64-bit)	1 MB	1 MB	2 MB
	Microsoft Windows 2003 R2 (32-bit and 64-bit)			
	Microsoft Windows 2008 (32-bit)			



No additional memory (RAM) is required either on the HPOM or on the managed nodes for the HP Storage Essentials SRM SPI.

Software Requirements

- HPOM for Windows 8.10 is updated with the latest server and agent patches
- HP Storage Essentials SRM 6.0 (SP4), 6.1.0, 6.1.1

- HP Operations Smart Plug-In Self-Healing Integration Component, Version 2.30

HPOM Management Server Versions

Table 2 Versions of HPOM management server

HPOM Management Server	Operating System	HPOM Agent Types
HPOM 8.10	<ul style="list-style-type: none"> • Microsoft Windows 2003 (32-bit) • Microsoft Windows 2003 R2 (32-bit) • Microsoft Windows 2008 EE (32-bit) 	HTTPS DCE

HP SE SRM CMS Versions

Table 3 Versions of HP Storage Essentials CMS

HP SE SRM	Operating System
HP Storage Essentials 6.0, SP4 HP Storage Essentials 6.1.0 HP Storage Essentials 6.1.1	<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) and SLES 10

CIM Extension and HPOM Agent Versions

Table 4 Versions of CIM Extension and HPOM Agent

Agent	Operating System
CIM Extension	Windows 2003 (32-bit and 64-bit)
HPOM Agent	Windows 2003 R2 (32-bit and 64-bit)
	Windows 2008 (32-bit)
	HP-UX 11.11
	HP-UX 11.23 PA
	HP-UX 11.23 IA
	HP-UX 11.31 PA
	HP-UX 11.31 IA
	Solaris 9
	Solaris 10
	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
	Tru64 5.1 B

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.

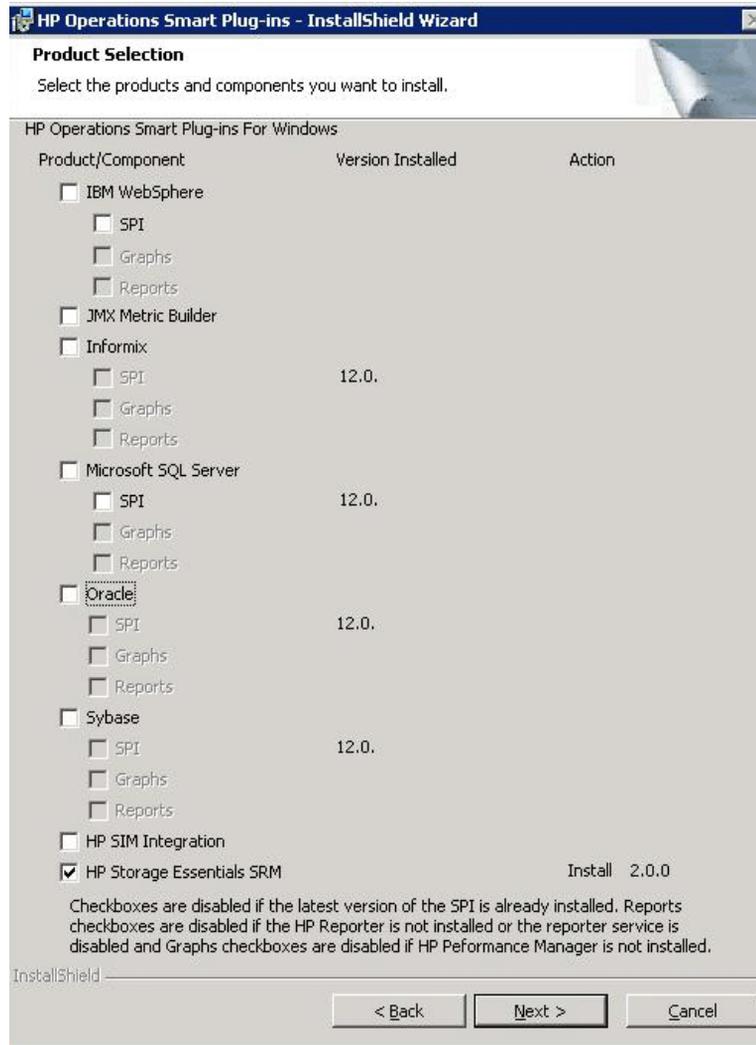
Also make sure that you install HPOM and patch it to the latest required level. After completing the installation of HPOM, use the HP Operations Smart Plug-ins DVD to install the HP Storage Essentials SRM SPI software.

Follow these steps:

- 1 Insert the Smart Plug-ins, DVD into the DVD drive of the management server or console system.
- 2 Click **Next** to continue.
- 3 Click **Next** to proceed.

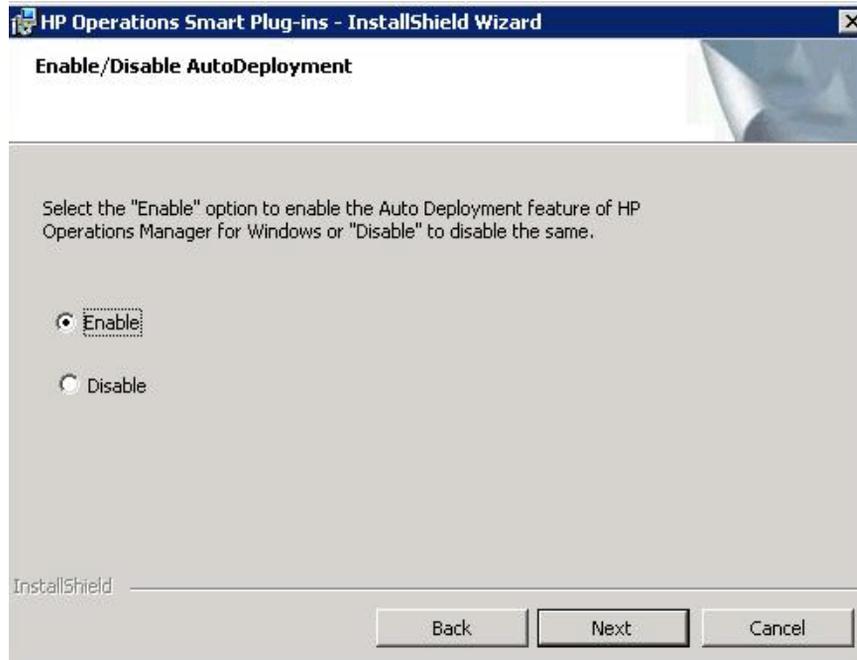


- 4 In the next dialog, select HP Storage Essentials SRM to install.



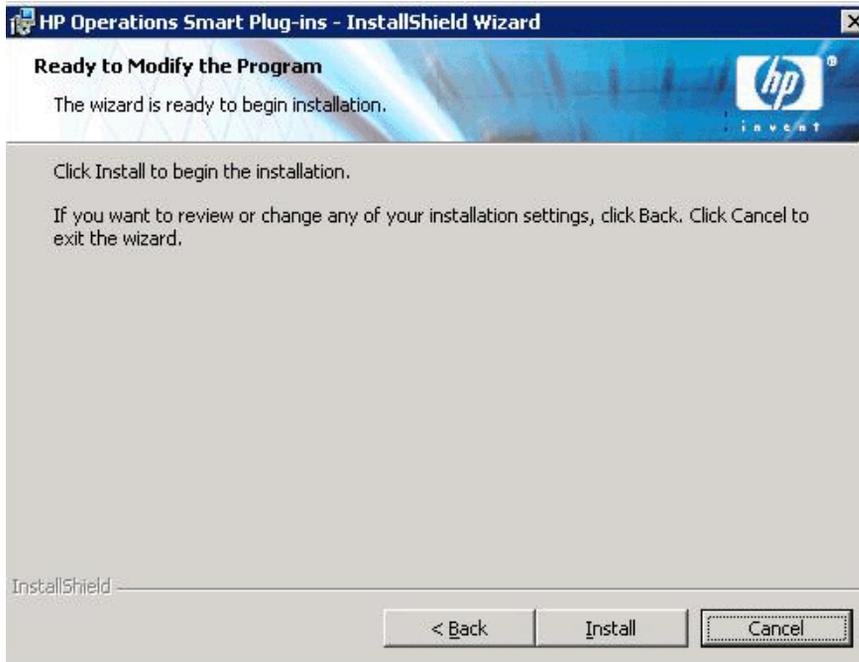
- 5 When complete with selecting products, click **Next**.

- 6 HP Operations Manager 8.10 deploys policies automatically only when desired. Select to disable or enable the Auto Deployment feature.



- 7 Indicate your acceptance of licensing agreement terms by selecting the **I accept the terms in the license agreement** button.
- 8 Click **Next**.

- 9 Selecting **Back** allows you to edit previous selections, otherwise, click **Install** to begin installation.



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

- 10 You will see various status dialogs as the install program proceeds. Depending on the speed of your system and the components selected for installation, this process could take several minutes or more.
- 11 Click **Finish** to conclude the installation.

Verifying Installation

Open the HPOM console and check that the following elements are present.

Table 5 List of elements to be present in the HPOM console

HPOM Console	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 Groups	HP Storage Essentials SRM <ul style="list-style-type: none">• AppStorManager-Win• AppStorManager-Unix• CIM Extension-Win• CIM Extension-Unix• HPSESRMSPI Utils
Policy Groups	HP Storage Essentials SRM <ul style="list-style-type: none">• HP SESRM Event Acknowledging• AppStorManager-Win• AppStorManager-Unix• CIM Extension-Win• CIM Extension-Unix• Service Discovery
User Roles	HP SE SRM SPI Admin

If they are not present in the HPOM console, uninstall the HP Storage Essentials SRM SPI (see [Uninstalling HP Storage Essentials SRM SPI from HPOM](#) on page 76) and reinstall it (see [Installing the HP Storage Essentials SRM SPI](#) on page 20).

Installed File Locations

The installation process copies the necessary files on the HPOM.

Table 6 Location of the installed files on the HPOM

File Type	Location on the HPOM
Binaries and Scripts	<OvInstallDir>install\HPSESRMSPI <HP OMShareInstallDir>SPI-Share\HPSESRMSPI
Instrumentation	<OvInstallDir>Data\shared\Instrumentation \Supported Operating Systems\HP Storage Essentials SRM
Documentation	<OvInstallDir>install\HPSESRMSPI\doc
MofFiles	<OvInstallDir>install\HPSESRMSPI\NLS\1033 \MofFiles

The following lists the directories that are used on deployment of the policies to the HPOM managed node(s).

Table 7 List of Directories

Operating System	File Location
HP-UX, Solaris, Linux, Tru64	/var/opt/OV/bin/instrumentation
Microsoft Windows	<OvAgentDir>\bin\instrumentation
AIX	/var/lpp/OV/OpC/instrumentation

The HP Storage Essentials SRM SPI instrumentation scripts are copied into these paths when the HP SE SRM instrumentation is deployed to the managed nodes.

3 Configuring the HP Storage Essentials SRM SPI

Configuring the HP Storage Essentials SRM SPI requires the following tasks.

Task 1: Install the HPOM Agent on Nodes

The HPOM agent must be installed on all the nodes that needs to be managed by the HPOM. Before starting, make sure that the system on which you want to install the HPOM agent meets the installation requirements provided in [Chapter 2, Installing the HP Storage Essentials SRM SPI](#).

You can install the HPOM agent on a managed node by various methods. For more information on the various installation methods, see the *HP Operations Manager for Windows Installation Guide* and also the documents listed in [Chapter 2, Installing the HP Storage Essentials SRM SPI](#).

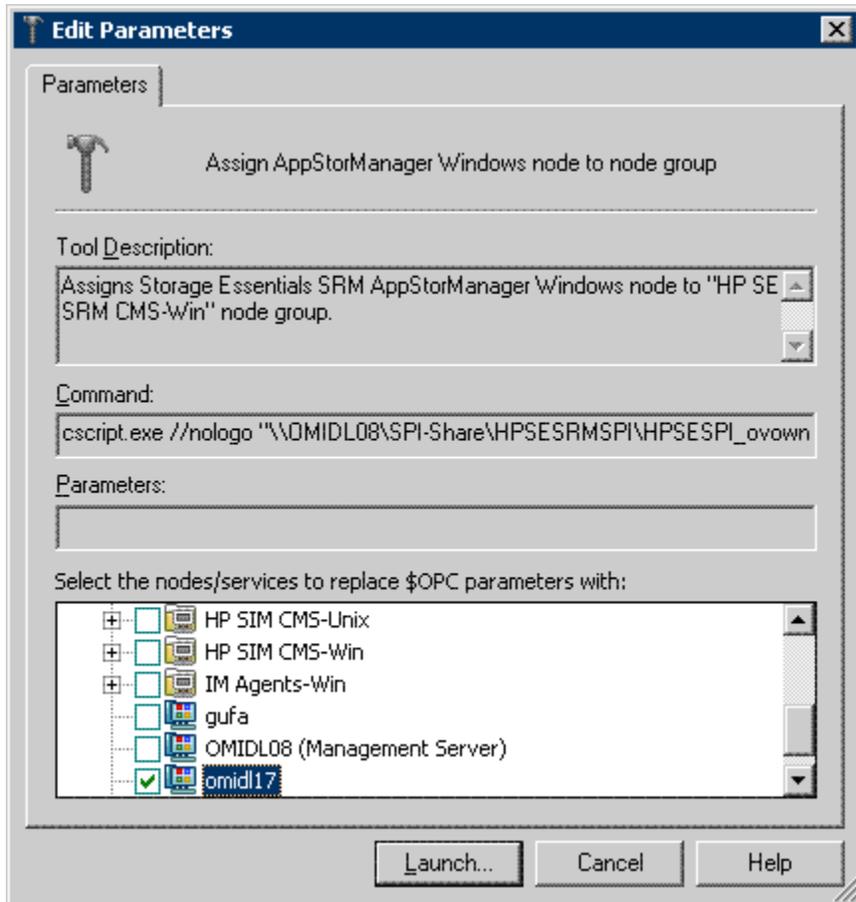
Task 2: Assign Nodes to the HP SE SRM Node Group

Assigning the AppStorManager Node to the Node Group

This tool assigns the node to the chosen HP SE SRM CMS node group and deploys the HP SE SRM policy groups **AppStorManager-Unix** or **AppStorManager-Win** (depending on your node's operating system) and Service Discovery policies. The service discovery policy deployment causes the HP SE SRM discovery process to run. If an HP SE SRM service is not discovered, the corresponding monitor policy is disabled.

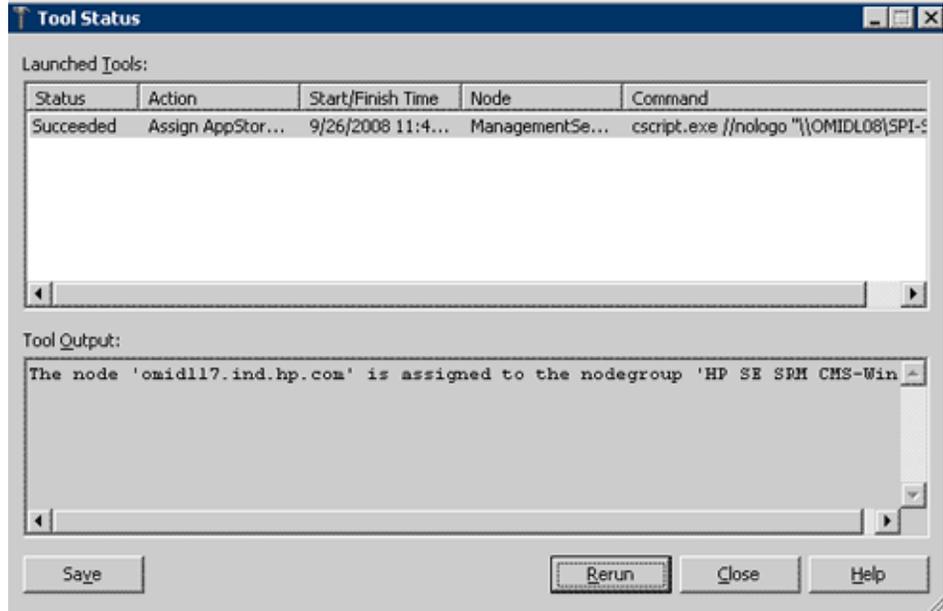
To assign the nodes on which the HP SE SRM AppStorManager service is running to the node group, follow these steps:

- 1 Log on to the HPOM management server, and start the HPOM Console.
- 2 Select **Tools > HP Storage Essentials SRM > AppStorManager-Unix or AppStorManager-Win** and right-click **Assign AppStorManager node to node group**.
- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.



- 4 From the **Select the nodes/services to replace \$OPC parameters with**, select the node on which the SE SRM AppStorManager service is running.

- 5 Click **Launch...**. The Tool Status window opens.



This assigns the node on which the SE SRM AppStorManager process is running to the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group.

▶ When the managed node is assigned to the HP SE CMS-Win Node group using “Assign Node to Node Group” Tool, the following warning message is displayed on the HPOM.

```
Discovery command "C:\WINDOWS\system32\cmd.exe /C "perl "C:/Documents and Settings/All Users/Application Data/HP/HP BTO Software/bin/instrumentation/HPSESPI_CreateHostServices.pl"" returned with non-zero return value.
```

This occurs because HP SESRM authentication is not provided. The authentication is provided when you run the **Get HP SE SRM Credentials** tool from the **HP SE SRM SPI Utils** tools group.



When the new nodes are added in the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group, the Service Discovery policy is deployed to each new node.

The HP SE SRM instrumentation and relevant policies gets auto-deployed along with the Service Discovery policy to the node.

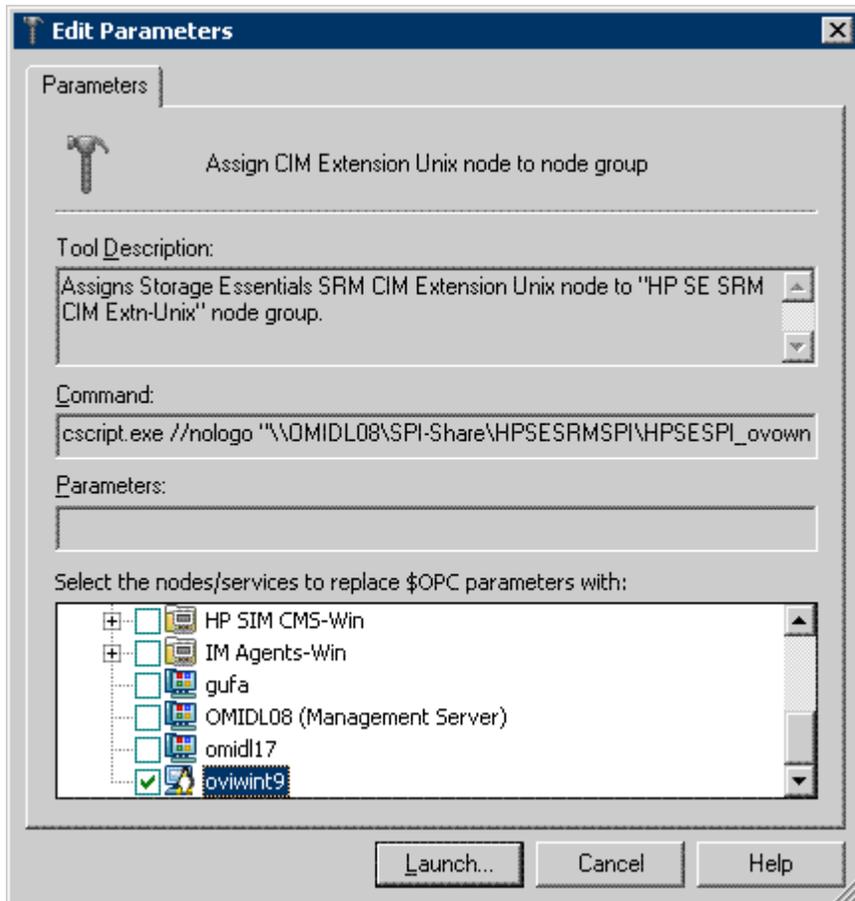


The automatic policy deployment requires the HPOM agent to be present on the managed nodes. If the HPOM agent is not present on the Windows nodes, the management server deploys the agent automatically if the node is not an **external node**. For UNIX nodes, the agent must be installed manually. You can install the HPOM agent by various methods. For more information, see *HP Operations Manager for Windows Installation Guide*.

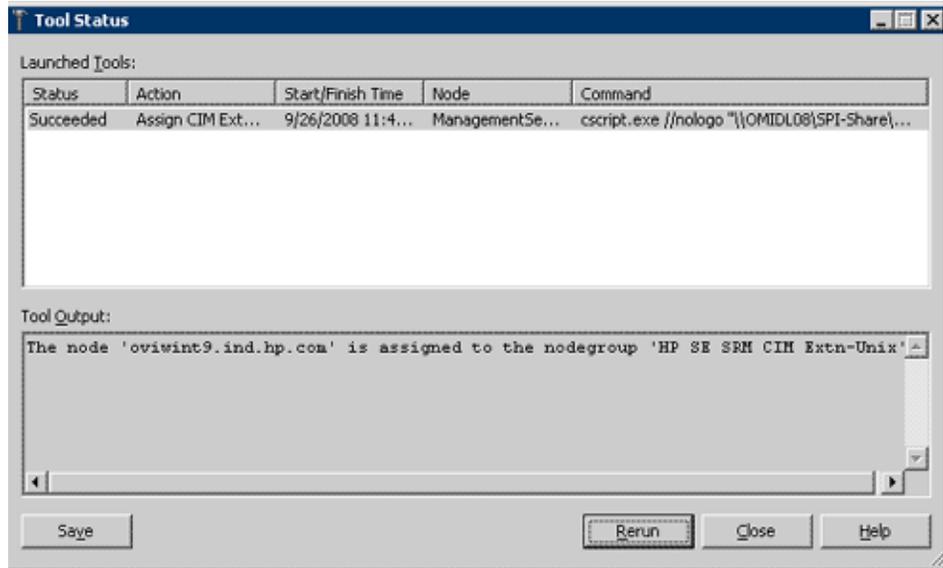
6 Assign the CIM Extension Node to the Node Group.

To assign the node on which the SE SRM CIM Extension process is running to the node group, follow these steps:

- 1 Log on to the HPOM management server and start the HPOM Console.
- 2 Select **Tools > HP Storage Essentials SRM > CIM Extension-Unix** or **CIM Extension-Win** and right-click **Assign CIM Extension node to node group**.
- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.



- 4 From the **Select the nodes/services to replace \$OPC parameters with**, select the node on which the SE SRM CIM Extension process is running.
- 5 Click **Launch....** The Tool Status window opens.



This assigns the node on which the SE SRM CIM Extension process is running to the HP SE SRM CIM Extn-Unix *or* HP SE SRM CIM Extn-Win node group.



When the new nodes are added in the HP SE SRM CIM Extn-Unix or HP SE SRM CIM Extn-Win node group, the Service Discovery policy is deployed to each new node.

Assigning the HP SE SRM CIM Extension node to the node group also starts auto-deployment of the HP SE SRM CIM Extension Service Monitoring policy to the node.

Task 3: Obtain HP SE SRM Credentials

To start the functionality provided with the HP Storage Essentials SRM SPI, you must first enter the HP SE SRM credentials for each HP SE SRM CMS.

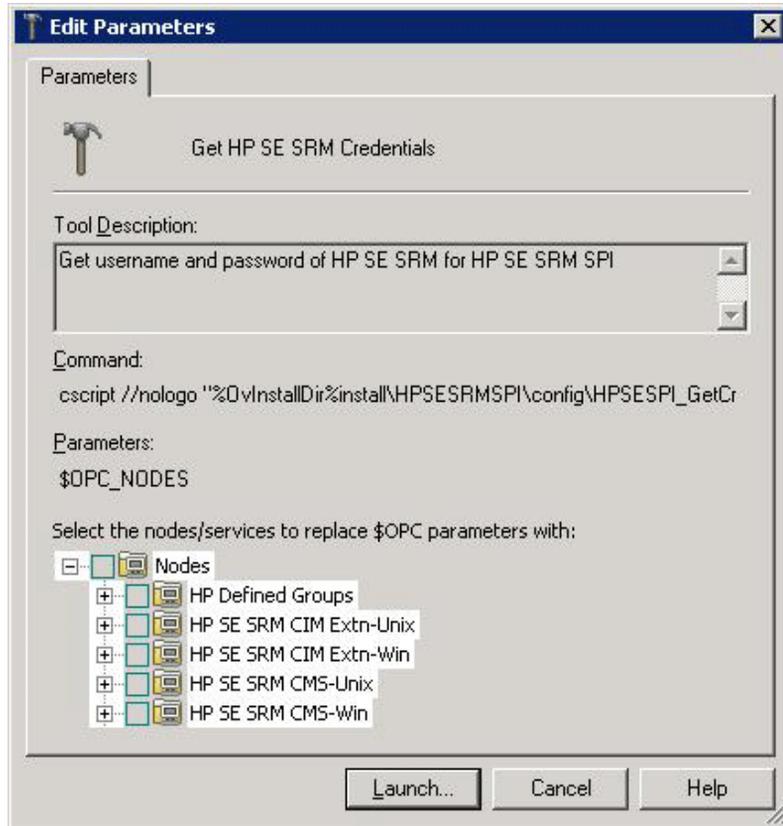


HP SE SRM credentials are stored in an encrypted format on the HPOM managed nodes.

To obtain HP Storage Essentials SRM SPI credentials, follow these steps:

- 1 Log on to the HPOM management server and start the HPOM Console.
- 2 Select **Tools > HP Storage Essentials SRM > HP SE SRM SPI Utils** and right-click **Get HP SE SRM Credentials**.

- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.



- 4 From the **Select the nodes/services to replace \$OPC parameter with** option, select the node on which HP SE SRM CMS is running.

- 5 Click **Launch**. The following message is displayed:

```
Enter the HP Storage Essentials SRM username:
```

- 6 At the prompt, enter the HP SE SRM user name for HP SE CMS on this node and press **Enter**. The following message is displayed at the prompt:

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

- 7 Enter the corresponding HP Storage Essentials SRM password and press **Enter**.

```
Validating the entered credentials for omid109...
```

```
The entered credentials have been successfully
authenticated !!
Press the Enter key to exit
```

The tool attempts to verify the user name and password. At the prompt, press **Enter** to exit.

If the credentials entered are not authenticated by HP SE SRM, the following message is displayed:

```
Failed to validate the HP SE CMS credentials. Possible
causes could be:
1. HP SE SRM CMS is not installed
2. HP SE SRM CMS service is not running
3. HP SE SRM CMS credentials incorrect
Press any key to continue . . .
```

- 8 Press **Enter**. The command prompt window closes.



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 SE SRM 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 be drawn.



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.

Task 4: Import HP SE SRM Infrastructure

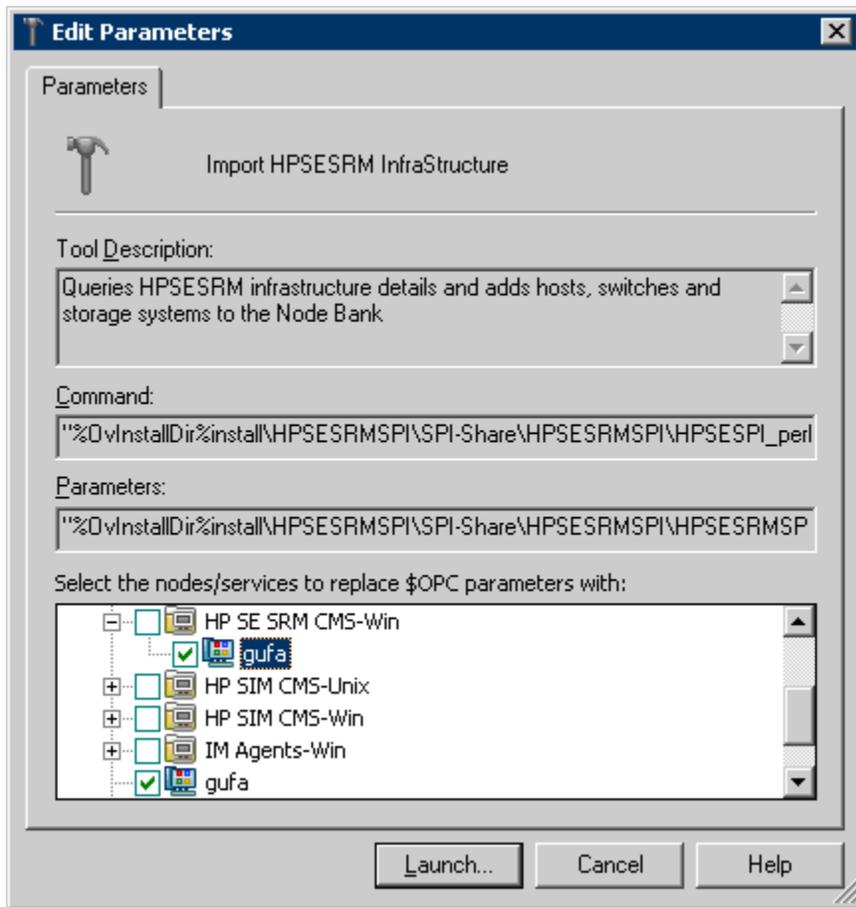
To get events from the HP SE SRM devices, you must import the infrastructure for each of the HP SE SRM CMS. To import the HP SE SRM Infrastructure, follow the below mentioned steps.

- 1 Log on to the HPOM Management Server and start the HPOM Console.
- 2 Select **Tools > HP Storage Essentials SRM > HP SE SRM SPI Utils** and right click **Import HP SE SRM Infrastructure**

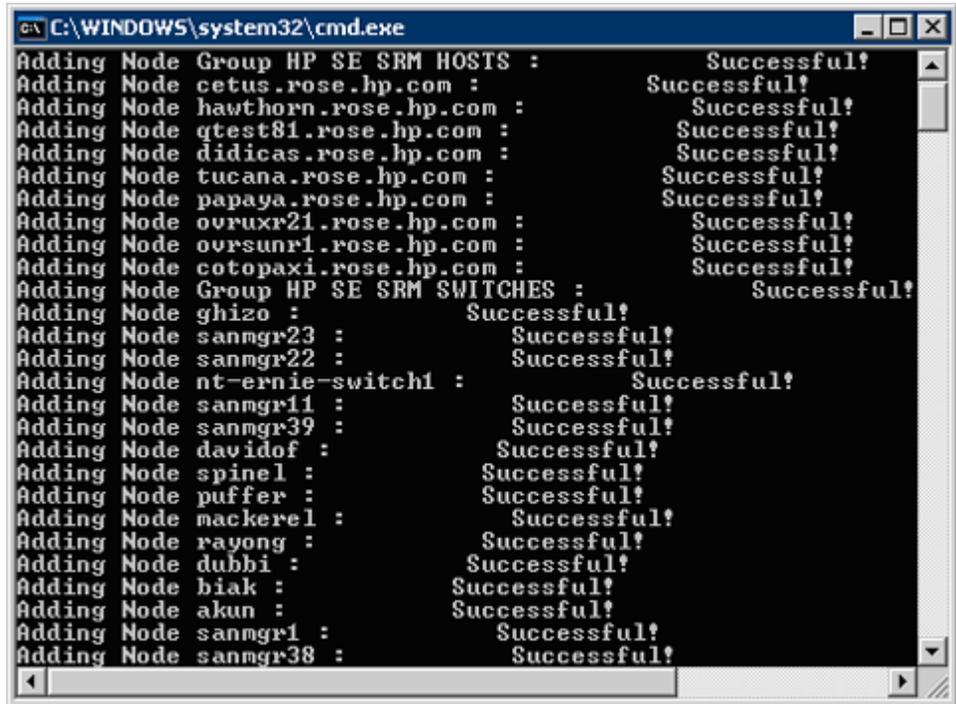


This tool can be executed only on HTTPS agent nodes.

- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.
- 4 From the **Select the nodes/services to replace \$OPC parameters with** option, select the node on which the HP SE SRM CMS is running.



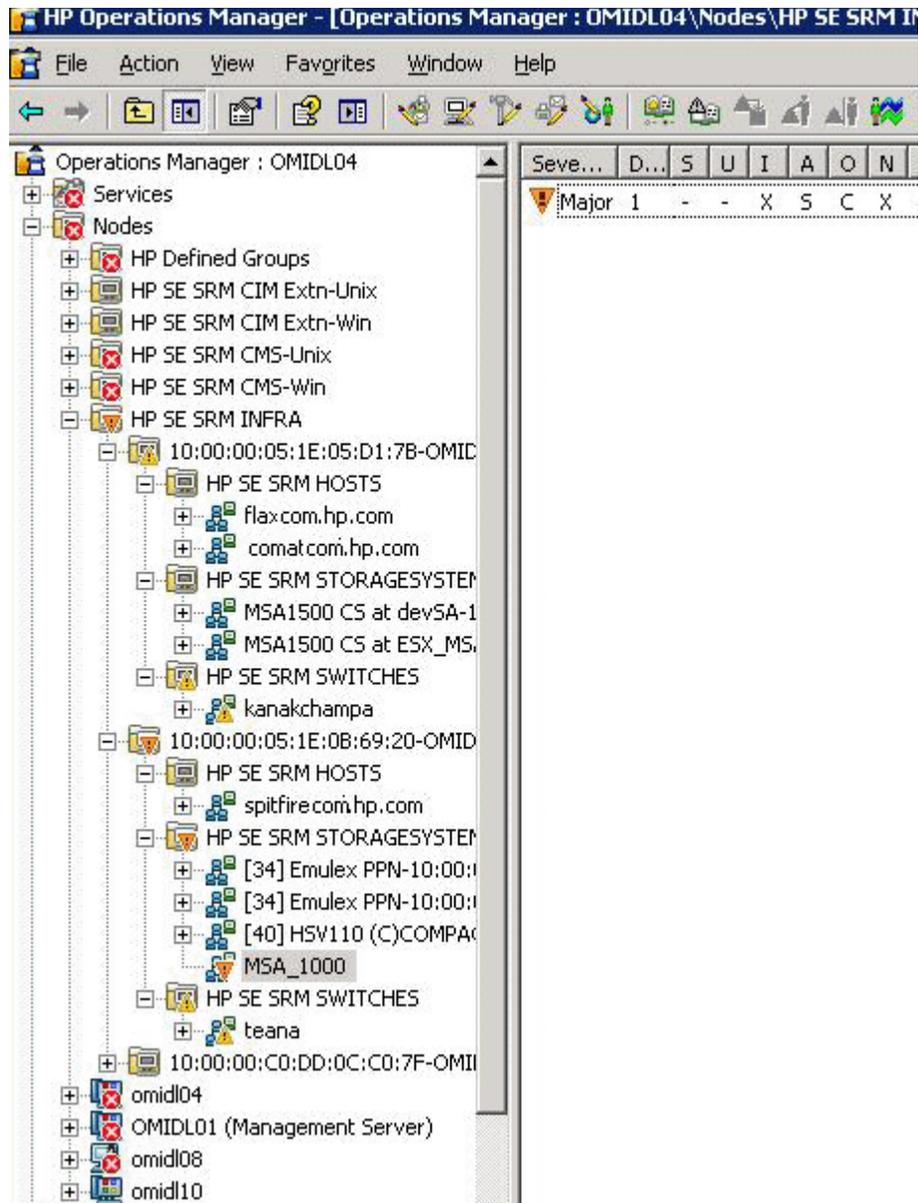
- 5 Click **Launch**. This will add all the Hosts, Switches and Storage Systems to the Node Bank.



```
C:\WINDOWS\system32\cmd.exe
Adding Node Group HP SE SRM HOSTS : Successful!
Adding Node cetus.rose.hp.com : Successful!
Adding Node hawthorn.rose.hp.com : Successful!
Adding Node qttest81.rose.hp.com : Successful!
Adding Node didicas.rose.hp.com : Successful!
Adding Node tucana.rose.hp.com : Successful!
Adding Node papaya.rose.hp.com : Successful!
Adding Node ovruxr21.rose.hp.com : Successful!
Adding Node ovr.sunr1.rose.hp.com : Successful!
Adding Node cotopaxi.rose.hp.com : Successful!
Adding Node Group HP SE SRM SWITCHES : Successful!
Adding Node ghizo : Successful!
Adding Node sanmgr23 : Successful!
Adding Node sanmgr22 : Successful!
Adding Node nt-ernie-switch1 : Successful!
Adding Node sanmgr11 : Successful!
Adding Node sanmgr39 : Successful!
Adding Node davidof : Successful!
Adding Node spinel : Successful!
Adding Node puffer : Successful!
Adding Node mackerel : Successful!
Adding Node rayong : Successful!
Adding Node dubbi : Successful!
Adding Node biak : Successful!
Adding Node akun : Successful!
Adding Node sanmgr1 : Successful!
Adding Node sanmgr38 : Successful!
```

- 6 Click **Enter**. The command prompt window closes automatically.

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



- HP SE SRM INFRA
 - FABRICNAME-SECMS

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

▶ The HP SE SRM INFRA node groups and the nodes that they contain should be deleted manually after the HP SE SRM CMS node is unmanaged from HPOM.

To delete the HP SE SRM SPI Infrastructure node groups and the nodes that they contain, execute the following steps:

- 1 Open the Node Configuration Editor.
- 2 On the right pane, right click on HP SE SRM INFRA node group and click on Delete.
- 3 A Confirm Delete window opens, click on **Yes**.

▶ The device(s) without any fabric association is not added to the Node Bank.

▶ 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 5: Configure the HPOM Agent for a Non-root User

For information on configuring the HPOM agent to run as a non-root user, see the *HP Operations HTTPS Agent Concepts and Configuration Guide*.

To configure non-root user on Linux nodes, follow these steps:

- 1 Log on to the managed node as a root user and open a terminal window.
- 2 Access the instrumentation directory of the node:

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

- 3 Enter the following command at the command prompt:

```
./HPSESPI_perl HPSESPI_root.pl.
```

This command generates the HPSESPI.su file.

The following message is displayed on successful execution of the command:

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

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

Providing Access to HP Storage Essentials SRM SPI Applications

To provide access to HP 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/HPSESPI.su
```

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

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

On HP-UX and Linux, the `$CIMExtPath` is `/opt`

On Solaris, enter the following command to get the value for `$CIMExtPath`:

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

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 `%OvDataDir%\bin\instrumentation` directory on the HP SE SRM CMS
- 2 Create a file named `hp-event-config.xml` in the `%OvDataDir%\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 SE SRM, 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:

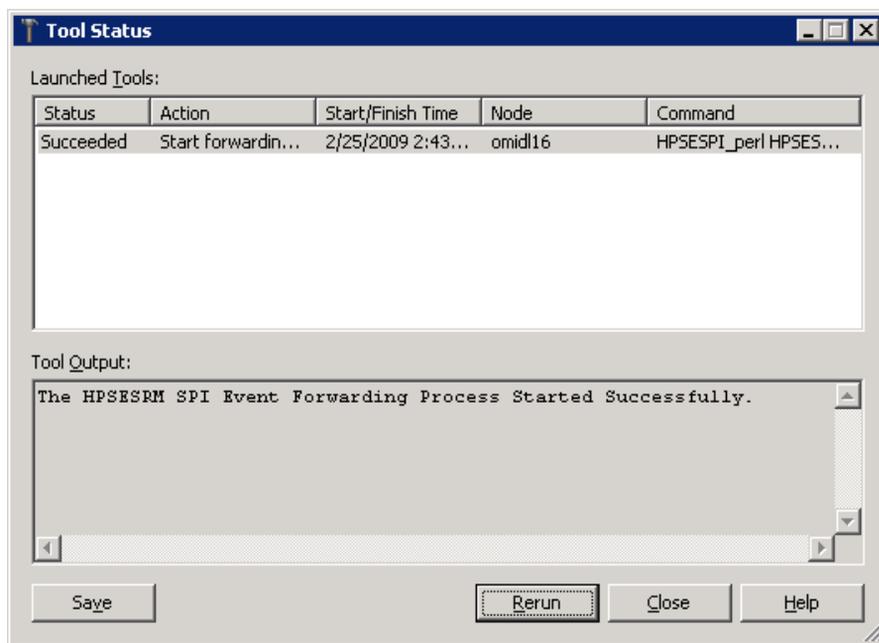
between the `<HP-config>` tags:

```
<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:

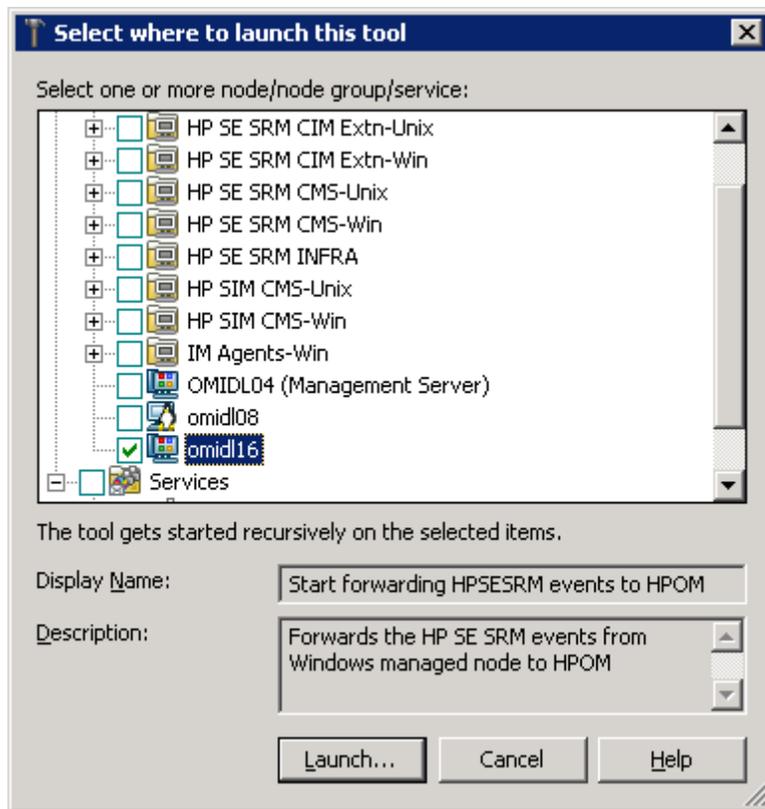
```
<event-filter-element-name>ElementA</event-filter-element-name>
```



Enable event forwarding from HP SE SRM CMS to HPOM

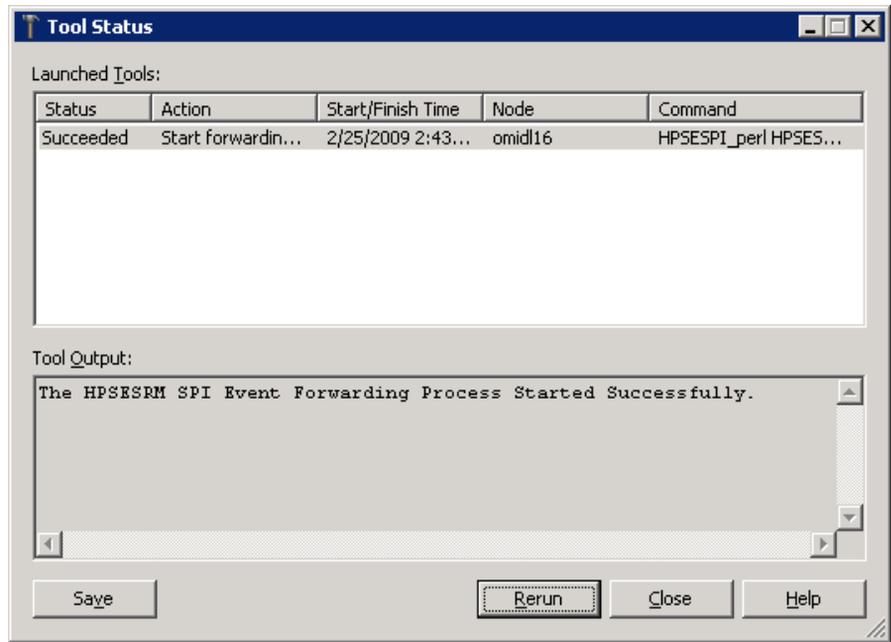
To start the event forwarding from HP SE SRM to HPOM running on Windows or UNIX, complete the following steps:

- 1 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.



- 2 From **Select Nodes/Services** pane, select the HP SE SRM CMS node in **HP SE SRM CMS-Win** or **HP SE SRM-Uinx** node group.

- 3 Click **Launch....** . The tool status window 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. This is enabled by the policy named **HPSESRMSPI-HPSESRM_Events-Win** or **HPSESRMSPI-HPSESRM_Events-Unix** which is auto deployed to the nodes when the nodes are added in the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group.

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 policies in the policy group **HP Storage Essentials SRM > HP SE SRM Event Acknowledging** are deployed to the HPOM management server while installing HP SE SRM SPI. The policies are:

- HPSESRMSPI-HPSESRM_ClearEvents
- HPSESRMSPI-HPSESRM_Auto_Acknowledge
- HPSESRMSPI-HPSESRM_DupEvent_Acknowledge

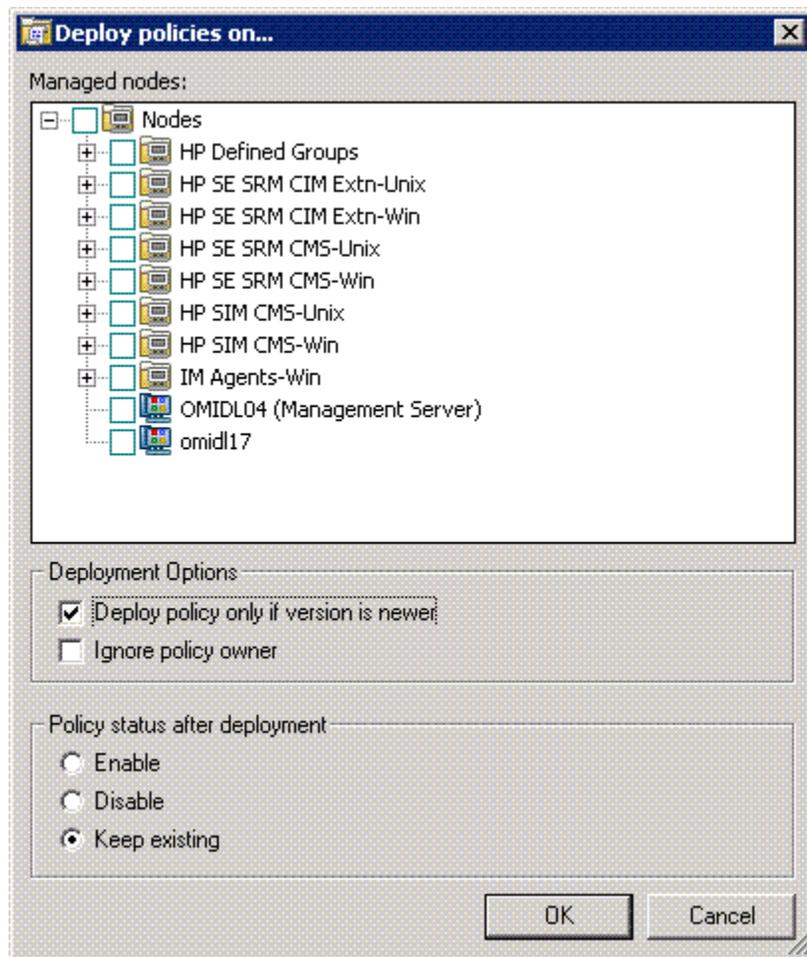
To verify whether the policies are deployed on the HPOM console, follow these steps:

- 1 Right-click the HPOM managed node.
- 2 Select **View > Policy Inventory** and look for the presence of the above listed policies.

If the policies are not deployed to HPOM, follow these steps:

- 3 Select **Policy Groups > HP Storage Essentials SRM** and right-click **HP SE SRM Event Acknowledging**.

- 4 Select **All Tasks > Deploy on**. The Deploy policies on window opens.



- 5 Select the HPOM server node.
- 6 Clear **deploy policy only if version is newer** option.
- 7 Click **OK**.



For event clearing from HPOM to SESRM CMS, the event on the HPOM message browser should be acknowledged one at a time. The dependent events are also acknowledged. Acknowledging multiple events is not supported.

Task 9: Reconfigure HP SE SRM CMS Credentials for HP SE SRM SPI

Follow these steps:

- 1 Stop forwarding HP SE SRM Events to HPOM.
- 2 Enter the new HP SE SRM CMS credentials.

For more information, see [Task 3: Obtain HP SE SRM Credentials](#) on page 33.

- 3 Start forwarding HP SE SRM Events to HPOM, see [Task 6: Configuring the HP SE SRM SPI to forward HP SE SRM events to HPOM](#) on page 42.

The credentials are used by HP SE SRM SPI for clearing the events on HP SE SRM CMS when acknowledged on HPOM.

The following functionalities require HP SE SRM credentials:

- Viewing the Service discovery map
- Importing the HP SE SRM Infrastructure
- Forwarding the events from HP SE SRM CMS to HPOM
- Acknowledging the events on HPOM when they are cleared on the HP SE SRM CMS
- Clearing the events on HP SE SRM CMS when acknowledged on HPOM.

4 Using the HP Storage Essentials SRM SPI

Using the HP SE SRM SPI Policies

All policies provided with HP SE SRM SPI are grouped under the **HP Storage Essentials SRM** policy group. HP SE SRM SPI provides a set of pre-configured policies for HP SE SRM nodes. These policies enable you to monitor the status of the services running on these nodes.

The HP SE SRM SPI installation creates the following high-level policy groups:

- AppStorManager-Unix
- AppStorManager-Win
- CIM Extension-Unix
- CIM Extension-Win
- HP SE SRM Event Acknowledging
- Service Discovery

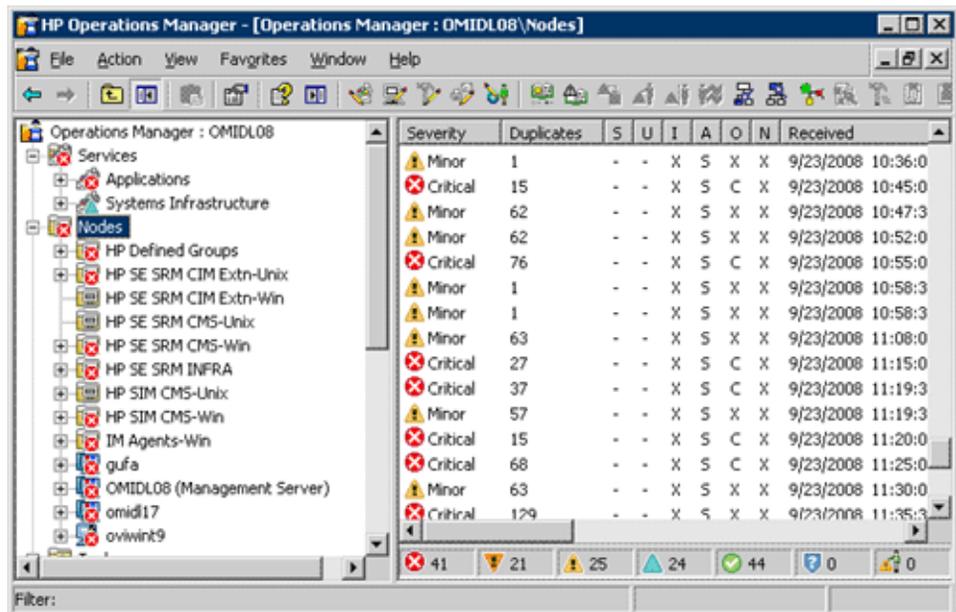


For more information on the pre-configured policies provided by HP SE SRM SPI, see [HP Storage Essentials SRM SPI Policy Groups](#).

Using the HP Storage Essentials SRM SPI Node Group

Installing the HP Storage Essentials SRM SPI creates the following node groups (shown in the figure that follows):

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



The screenshot shows the HP Operations Manager interface. The left pane displays a tree view of the 'Nodes' folder, which includes sub-folders for 'HP Defined Groups' and 'HP SE SRM' (containing CIM Extn-Unix, CIM Extn-Win, CMS-Unix, CMS-Win, INFRA, SIM CMS-Unix, and SIM CMS-Win). The right pane shows a table of events for the selected node.

Severity	Duplicates	S	U	I	A	O	N	Received
Minor	1	-	-	X	S	X	X	9/23/2008 10:36:0
Critical	15	-	-	X	S	C	X	9/23/2008 10:45:0
Minor	62	-	-	X	S	X	X	9/23/2008 10:47:3
Minor	62	-	-	X	S	X	X	9/23/2008 10:52:0
Critical	76	-	-	X	S	C	X	9/23/2008 10:55:0
Minor	1	-	-	X	S	X	X	9/23/2008 10:58:3
Minor	1	-	-	X	S	X	X	9/23/2008 10:58:3
Minor	63	-	-	X	S	X	X	9/23/2008 11:08:0
Critical	27	-	-	X	S	C	X	9/23/2008 11:15:0
Critical	37	-	-	X	S	C	X	9/23/2008 11:19:3
Minor	57	-	-	X	S	X	X	9/23/2008 11:19:3
Critical	15	-	-	X	S	C	X	9/23/2008 11:20:0
Critical	68	-	-	X	S	C	X	9/23/2008 11:25:0
Minor	63	-	-	X	S	X	X	9/23/2008 11:30:0
Critical	129	-	-	X	S	X	X	9/23/2008 11:35:3

Summary statistics at the bottom of the table: 41 Critical, 21 Warning, 25 Minor, 24 Information, 44 OK, 0 Error, 0 Unknown.

You can find more information about adding nodes in [Task 2: Assign Nodes to the HP SE SRM Node Group](#) on page 27.

Node folders and tool folders are associated as follows:

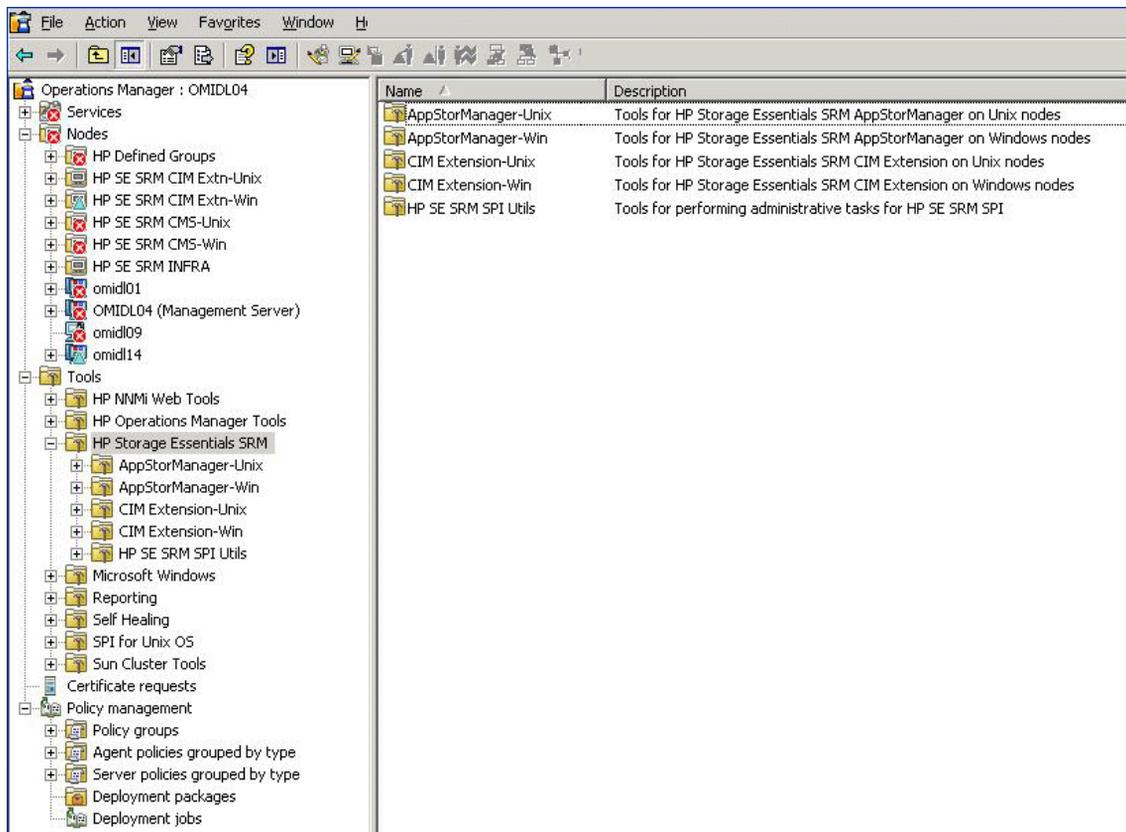
Table 8 Association between nodes folder and tools folder

Nodes Folder	Tools Folder
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 tools group in the HPOM Application bank window. The HP SE SRM tools group contains the following tools (shown in the figure that follows):

- AppStorManager-Unix
- AppStorManager-Win
- CIM Extension-Unix
- CIM Extension-Win
- HP SE SRM SPI Utils



The HP Storage Essentials SRM SPI tool folders contain a number of tools that enable the HPOM administrator to manage HP SE SRM.

The **AppStorManager-Unix** or **AppStorManager-Win** tools group contains tools that can be run on HP SE SRM CMS nodes (UNIX or Windows).

Using the AppStorManager Tools Group

The **AppStorManager-Unix** or **AppStorManager-Win** tools group includes tools for HP SE SRM AppStorManager that are run on HP SE SRM CMS server nodes.

The AppStorManager tools group includes the following tools that monitor the HP SE SRM AppStorManager process on selected UNIX or Windows nodes.

Table 9 Name of tools which monitor the HP SE SRM AppStorManager process

Tools Group	Tool Name	Description
AppStorManager-Unix	AppStorManager-Unix Start	Starts the HP SE SRM AppStorManager service on selected Unix nodes.
	AppStorManager-Unix Status	Status of HP SE SRM AppStorManager service on selected Unix nodes.
	AppStorManager-Unix Stop	Stops the HP SE SRM AppStorManager service on selected Unix nodes.
	Assign AppStorManager Unix node to node group	Assigns Storage Essentials SRM AppStorManager Unix node to \"HP SE SRM CMS-Unix\" node group.
	De-assign AppStorManager Unix node from node group	De-assign AppStorManager Unix node from node group.
	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	Gives 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

Tools Group	Tool Name	Description
AppStorManager-Win	AppStorManager-Win Start	Starts the HP SE SRM AppStorManager service on selected Windows nodes.
	AppStorManager-Win Status	Status of the HP SE SRM AppStorManager service on selected Windows nodes.
	AppStorManager-Win Stop	Stops the HP SE SRM AppStorManager service on selected Windows nodes.
	Assign AppStorManager Windows node to node group	Assigns the Storage Essentials SRM AppStorManager Windows node to \"HP SE SRM CMS-Win\" node group.
	De-assign AppStorManager Windows node from node group	De-assigns Storage Essentials SRM AppStorManager Windows node from \"HP SE SRM CMS-Win\" node group.
	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	Gives 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

Using CIM Extension Tools Group

The CIM Extension-Unix *or* CIM Extension-Win tools group includes the following tools for HP SE SRM CIM Extension that are run on the HP SE SRM CIM Extension nodes (UNIX *or* Windows). The CIM Extension tools group includes the tools that monitor HP SE SRM CIM Extension services on the selected UNIX *or* Windows nodes.

Table 10 Name of the tools which monitor HP SE SRM CIM Extension services

Tools Group	Tool Name	Description
CIM Extension-Unix	CIM Extension-Unix Start	Starts HP SE SRM CIM Extension on selected UNIX nodes
	CIM Extension-Unix Status	Status of the HP SE SRM CIM Extension on selected UNIX nodes.
	CIM Extension-Unix Stop	Stops HP SE SRM CIM Extension on selected UNIX nodes.
	Assign CIM Extension Unix node to node group	Assigns Storage Essentials SRM CIM Extension Unix node to \"HP SE SRM CIM Extn-Unix\" node group.
	De-assign CIM Extension Unix node from node group	De-assigns Storage Essentials SRM CIM Extension Unix node from \"HP SE SRM CIM Extn-Unix\" node group.

Tools Group	Tool Name	Description
CIM Extension-Win	CIM Extension-Win Start	Starts the HP SE SRM CIM Extension on selected Windows nodes.
	CIM Extension-Win Status	Gets the status of HP SE SRM CIM Extension on selected Windows nodes.
	CIM Extension-Win Stop	Stops the HP SE SRM CIM Extension on selected Windows nodes
	Assign CIM Extension Windows node to node group	Assigns Storage Essentials SRM CIM Extension Windows node to \"HP SE SRM CIM Extn-Win\" node group.
	De-assign CIM Extension Windows node from node group	De-assigns Storage Essentials SRM CIM Extension Windows node from \"HP SE SRM CIM Extn-Win\" node group.

Using the HP SE SRM SPI Utils Tools Group

The HP SE SRM SPI Utils tools group includes the following tools for performing administrative tasks for the HP Storage Essentials SRM SPI.

Table 11 Name of the tools used for performing administrative tasks for the HP Storage Essentials SRM SPI

Tools Name	Description
Clean HP SE SRM SPI–Unix	Deletes HP SE SRM SPI files on selected Unix managed nodes
Clean HP SE SRM SPI–Win	Deletes HP SE SRM SPI files on selected Windows managed nodes
Get HP SE SRM Credentials	Get username and password of HP Storage Essentials SRM for HPSESRMSPI.

Tools Name	Description
Service Discovery–Unix	Performs HP SE SRM Service Discovery on the UNIX managed nodes.
Service Discovery–Win	Performs HP SE SRM Service Discovery on the Windows managed nodes.
Tracing Off–Unix	Sets HP SE SRM SPI tracing to OFF state on UNIX managed nodes.
Tracing Off–Win	Sets HP SE SRM SPI tracing to OFF state on Windows managed nodes.
Tracing On–Unix	Sets HP Storage Essentials SRM SPI tracing to ON state on the UNIX managed nodes.
Tracing On–Win	Sets HP Storage Essentials SRM SPI tracing to ON state on the Windows managed nodes.
Version Verify	Verifies the version of HP Storage Essentials SRM SPI files.
Import HP SE SRM Infrastructure	Queries the HP SE SRM 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 SPI-UNIX	Deletes HP SE SRM SPI files on selected UNIX managed nodes
Clean HP SE SRM SPI-Win	Deletes HP SE SRM SPI files on selected Windows managed nodes

Using HP Storage Essentials SRM SPI messages

Events generated by the HP Storage Essentials SRM SPI are grouped under the HP Storage Essentials SRM SPI's

HPSESRMSPI-StorageEssentialsSRM message group. The messages generated by the HP Storage Essentials SRM SPI policies appear in the message browser window and contain information that is vital for understanding the problems being reported.

- ▶ Events with a severity of Normal are redirected to the HPOM acknowledged message browser in the **HPSESRMSPI-HPSESRM_Events** policy.

The figure below shows messages for the HP Storage Essentials SRM SPI.

The screenshot shows the HP Operations Manager interface. The left pane displays a tree view of the system hierarchy, including Services, Applications, Systems Infrastructure, and Nodes. The right pane shows a table of messages with the following columns: Severity, Duplicates, S, U, I, A, and P. The table contains the following data:

Severity	Duplicates	S	U	I	A	P
Major	19	-	-	X	S	
Critical	4	-	-	X	S	
Warning	4	-	-	X	S	
Minor		-	-	X	S	
Warning	4	-	-	X	S	
Minor		-	-	X	S	
Normal		-	-	X	-	
Normal		-	-	X	-	
Major		-	-	-	-	
Critical		-	-	-	-	

At the bottom of the message browser, there are summary icons: 3 Critical messages, 2 Major messages, and 2 Minor messages.

The message content describes the scope of the problem. The columns provide the following information:

- **Severity** – Specifies the severity of the message. The severities reported are normal, warning, minor, major, and critical. By default, normal severity messages are redirected to the acknowledged message browser.

- **Object** – Name of the HP SE SRM CMS node that forwarded the message to HPOM.
- **Application** –HP Storage Essentials SRM
- **Node** – The system name of the event source
- **Text** – A single line description of the event.
- **Message Group** – HPSESRMSPI-StorageEssentialsSRM.



\$OPTION (variable) – The event listener uses the -option switch in the opcmsg call to pass additional HP SE SRM event fields to HPOM.

\$OPTION(EventID) contains the HP SE SRM event ID.

\$OPTION(probableCause) contains the HP SE SRM event probable cause string. \$OPTION(EventType) contains the HP SE SRM event type.

\$OPTION(EventSubType) contains the HP SE SRM event sub type.

\$OPTION(DeviceID) contains the HP SE SRM device ID.

\$OPTION(ElementID) contains the HP SE SRM element ID.

These fields could be used in the **HPSESRMSPI-HPSESRM_Events** policies for customization.

Launching the HP SE SRM CMS Web Portal from the Message Browser

Each message forwarded to the HPOM message browser from HP SE SRM contains an Operator Action to launch into the HP SE SRM web interface. It launches the event details page of the corresponding message on HPOM. This allows the HPOM operator to determine the cause of the problem and perform corrective tasks for the events which belong to HPSESRMSPI-StorageEssentialsSRM message group.

To launch the HPSESRM web interface, follow these steps:

- 1 Select an event, right-click the event, and select **Commands > Start > Operator Initiated**. The HPSESRM logon page opens.
- 2 Sign in to HPSESRM with proper credentials.
- 3 This will open the event details page of the corresponding message.

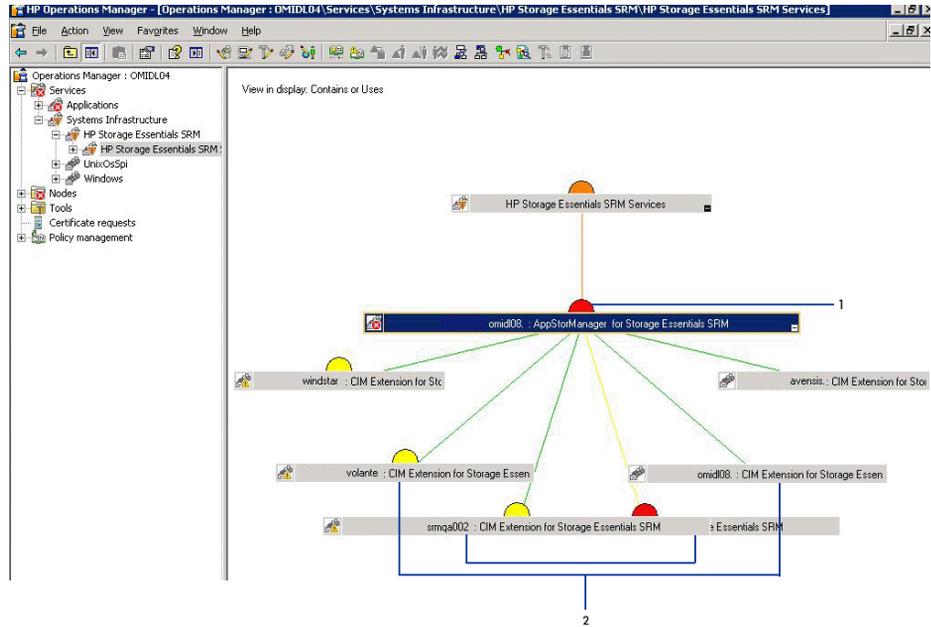
Using the HP Storage Essentials SRM SPI Service Map

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

The HP SE SRM managed hosts are discovered by querying the SE SRM CMS for its managed hosts. Therefore, some of the nodes represented in this tree may not be HPOM managed nodes. Status is shown only for CIM Extension nodes that have an HPOM 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 HP Storage Essentials SRM SPI policies must be installed or not. If the nodes in this tree are HPOM managed nodes with the HP Storage Essentials SRM SPI policies deployed, the service view node status changes based on the status of the CIM Extension on the node is displayed.

The following service map shows the status of the HP SE AppStorManager process.



The service status implications of the service map are the following:

Table 12 Service status implications of the service map

Item	Description
1	SE SRM CMS node
2	Nodes with CIM Extensions installed or running

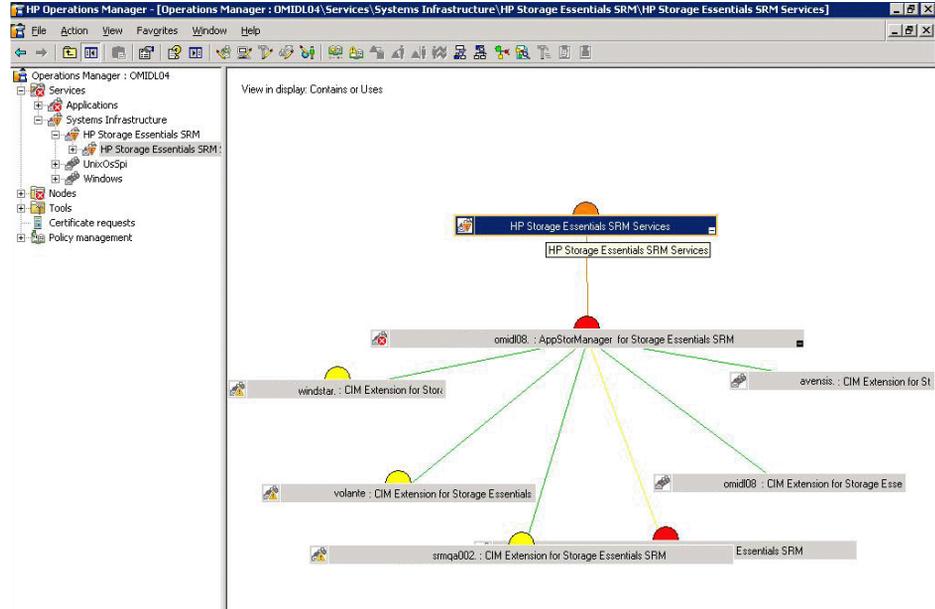


By default, status propagation rules for the objects in the HP SE SRM service tree are defined such that if the HP SE SRM CIM Extension service objects is critical (item 2 in the previous figure), the higher service objects status are decreased by two levels to minor.

If the HP SE SRM AppStorManager service objects is critical (item 1 in the previous figure), the higher service objects status are decreased by a level to major.

The parent service does not change the status of a child object and, by default, calculation rules for the HP SE SRM service trees are set to Most Critical. 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 following service map shows that the CIM Extension service on the node highlighted in red 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 an HP SE SRM network managed storage network.

Viewing Services

The service views are created after HP SE SRM CMS node is added to the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group, **Get HP SE SRM Credentials** tool is executed and service discovery is started. For information on adding SE SRM CMS to the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group, see [Task 2: Assign Nodes to the HP SE SRM Node Group](#) on page 27.

Running the appropriate Service Discovery tool on the SE CMS node generates services in the HP SE SRM service map. Make sure that you perform the steps described in [Task 3: Obtain HP SE SRM Credentials](#) on page 33 before performing the following steps for viewing the discovered HP SE SRM service.

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

- 1 Log on to the HPOM management server, and start the HPOM console.
- 2 Select **Services > System Infrastructure** on the left pane of the HPOM console.



By default, the HP Storage Essentials SRM SPI service discovery policy is configured to run service discovery every day at 2:00 am. You can change the service discovery period by modifying the Service discovery policy. The changed discovery period comes into effect only after the policies are redeployed on the HP SE SRM CMS node.

Importing SE Infrastructure into HPOM NodeBank

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

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

Information about the SE Infrastructure is collected from the SE Discovery Database. The following device types in SE are collected and added to HPOM Node bank.

- Hosts
- Switches
- Storage Systems

In HPOM for Windows, these messages are added as external nodes in the HPOM Node Bank.

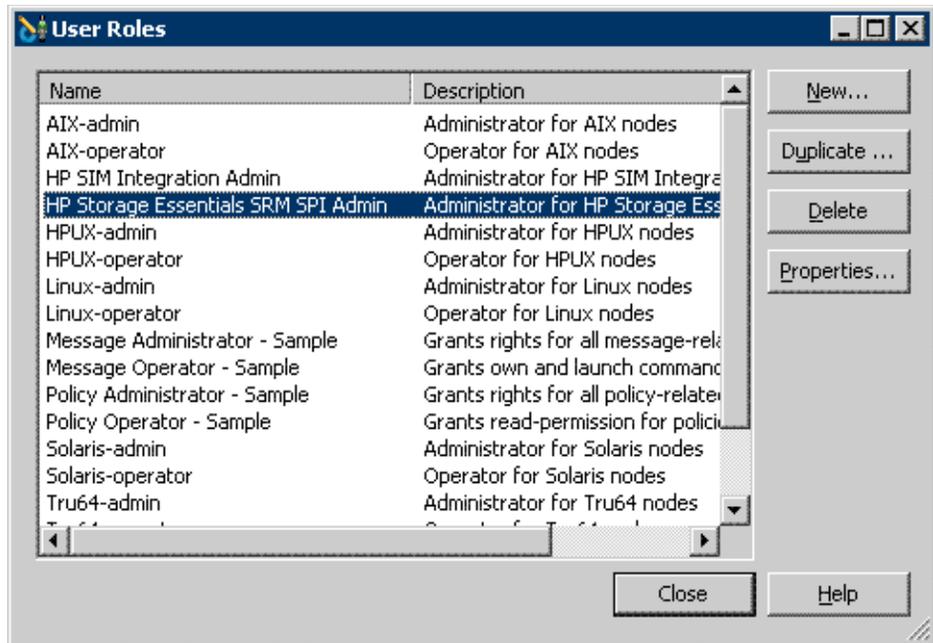
In HPOM for Unix, these messages are added as “Message Allowed Node” in the HPOM Node bank.

A new node group called HP SE SRM INFRA is added to add the all the created nodes. These nodes are added to sub-groups which we must create. These sub-groups are:

- HP SE SRM INFRA HOSTS,
- HP SE SRM INFRA SWITCHES
- HP SE SRM INFRA STORAGE SYSTEMS

Using HP Storage Essentials SRM SPI User Roles

The installation of the HP Storage Essentials SRM SPI adds a new user role, HP Storage Essentials SRM SPI Admin, to HPOM as shown in the following figure.



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

The HP Storage Essentials SRM SPI Admin user role assigns the following authorizations:

- Access all messages with message group attribute **HPSESRMSPI-StorageEssentials_SRM** from HP SE SRM CMS or HP SE SRM CIM Extension node.

- Execute any tool in the HP Storage Essentials SRM Tools groups.
- Update the HPOM service map, displaying the HP SE SRM services successfully discovered.

5 Uninstalling the HP Storage Essentials SRM SPI

Deleting HP Storage Essentials SRM SPI Instrumentation from Nodes

To remove HP Storage Essentials SRM SPI instrumentation from the managed nodes, follow these steps:

- 1 Open the **HP SE SRM SPI Utils** tools group in the **HP Storage Essentials SRM SPI** tools group.
- 2 Run the Clean **HP SE SRM SPI-Unix** tool on the selected Unix managed nodes.
- 3 Run the Clean **HP SE SRM SPI- Win** tool on the selected Windows managed nodes.
- 4 Right click each node on which the clean tool has been executed in above step and select **All Tasks** → **Synchronize Inventory** → **Policies**. All the policies present in the node gets synchronized with HPOM GUI.

Removing Nodes from the Node Group

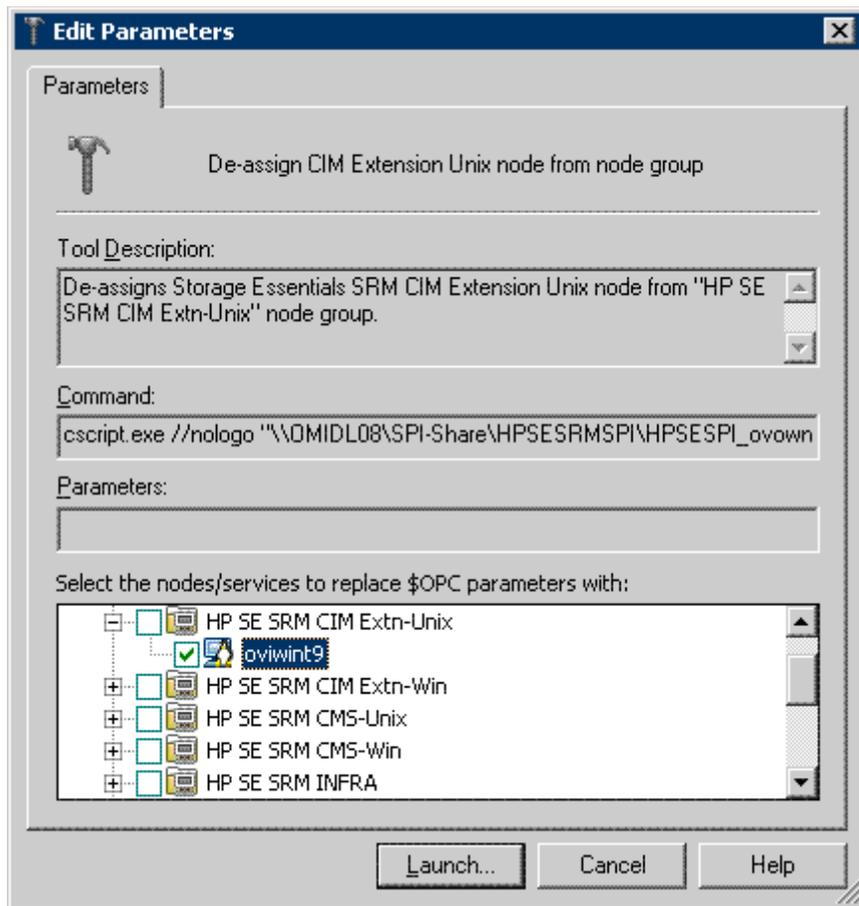
Removing a node from the node group involves the following tasks.

Task 1: Remove the AppStorManager Node from the Node Group

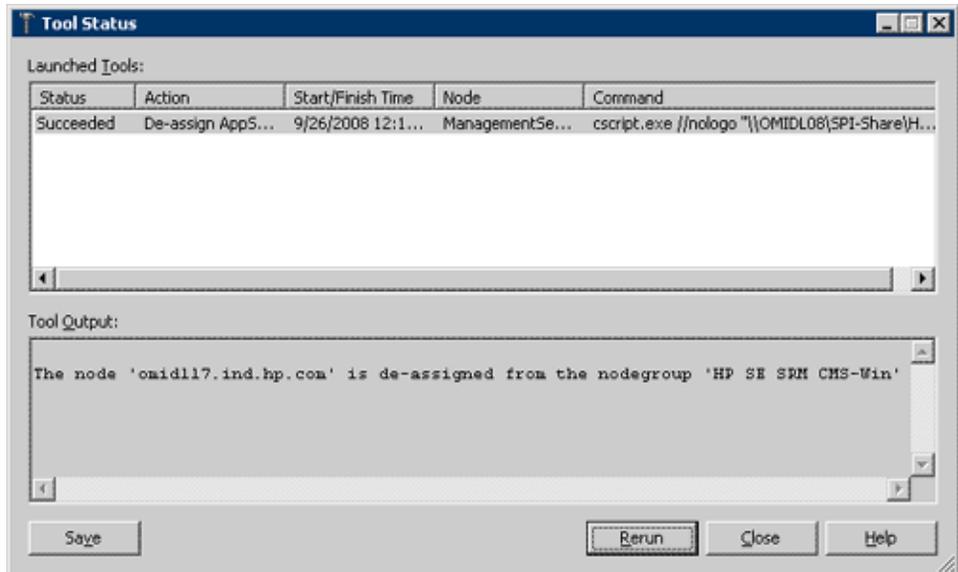
To remove the node on which the HP SE SRM AppStorManager service is running from the **HP SE SRM CMS-Unix** or **HP SE SRM CMS-Win** node group, follow these steps:

- 1 Log on to the HPOM management server, and start the HPOM Console.

- 2 Select **Tools > HP Storage Essentials SRM > AppStorManager-Unix** and right-click **De-assign AppStorManager node from node group**.
- 3 Select **All Tasks > Launch Tool**. The Edit Parameters window opens.



- 4 Select the node in the **HP SE SRM CMS-Win** node group in the **Select the nodes/services to replace \$OPC parameter with** window pane.
- 5 Click **Launch....** The Tool Status window opens.

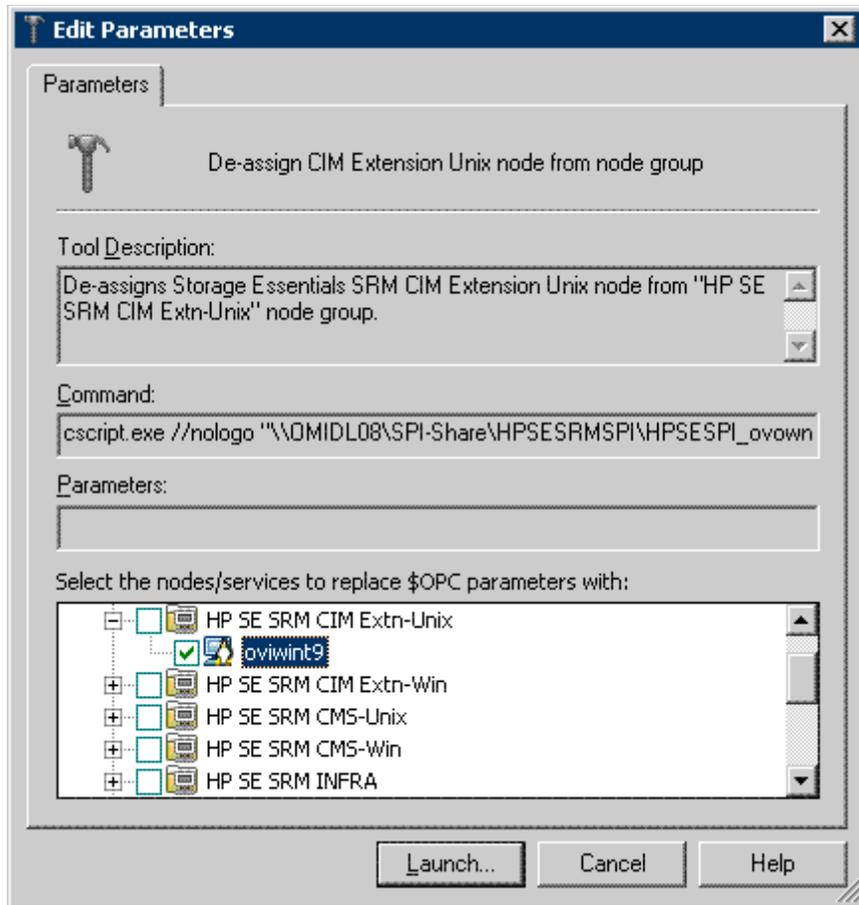


- 6 Repeat the previous steps to remove nodes from the HP SE SRM CMS-Win node groups using **Tools > HP Storage Essentials SRM > AppStorManager-Win > De-assign AppStorManager Win node from node group.**

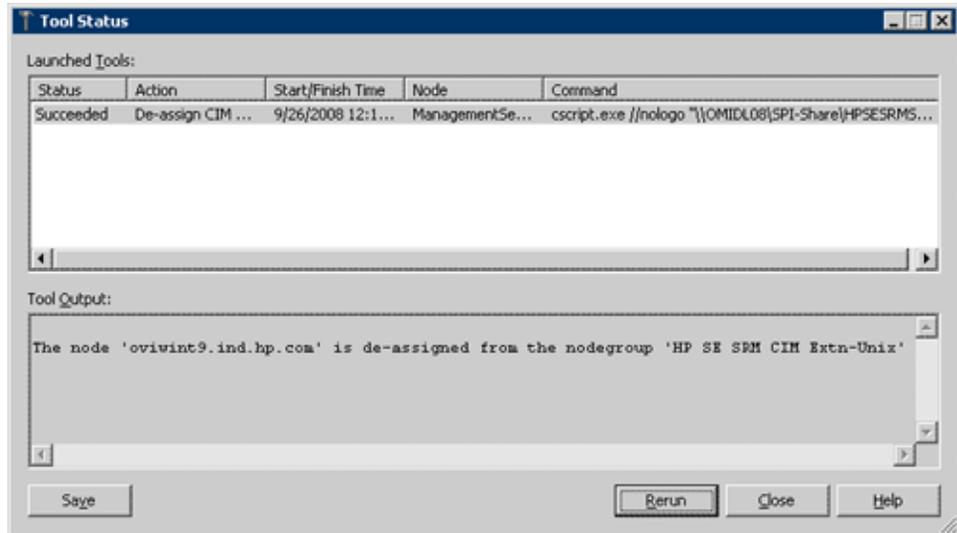
Task 2: Remove the CIM Extension Windows Node from the Node Group

To remove the node on which the HP SE SRM CIM Extension service is running, from the HP SE SRM CIM Extn-Unix *or* HP SE SRM CIM Extn-Win node group, follow these steps:

- 1 Select **Tools > HP Storage Essentials SRM > CIM Extension-Unix**, and right-click **De-assign CIM Extension Windows node from node group.**
- 2 Select **All Tasks > Launch Tool.** The Edit Parameters window opens.



- 3 Select the node in the HP SE SRM CIM Extn-Unix node group in the **Select the nodes/services to replace \$OPC parameters with** window pane.
- 4 Click **Launch....** The Tool Status window opens.



- 5 Repeat the previous steps to remove nodes from the HP SE SRM CIM Extension-Win node groups using the **Tools > HP StorageEssentials SRM > CIM Extension-Win > De-assign CIM Extension-Win node from node group**.



The nodes in the SE INFRA Node Group are not HPOM managed nodes and hence do not have to be removed from their node groups. Uninstalling the SE SRM SPI will automatically remove the SE INFRA Nodes and their node groups.

Uninstalling HP Storage Essentials SRM SPI from HPOM

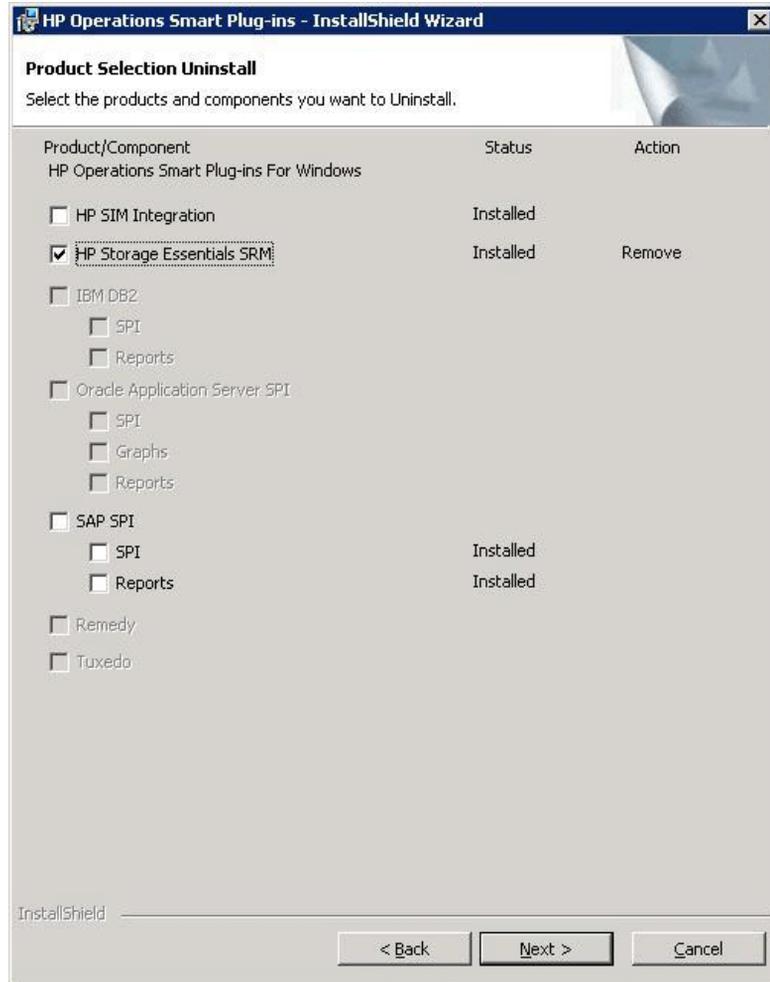
To uninstall the HP Storage Essentials SRM SPI components from HPOM, follow these steps:



Make sure that HPOM managed nodes are not present under the HP Storage Essentials SRM SPI node groups. They must be moved out of their respective groups before uninstalling the HP Storage Essentials SRM SPI. For information on removing the HPOM managed nodes, see [Removing Nodes from the Node Group](#) on page 71.

- 1 Insert the *HP Operations Smart Plug-ins DVD*.
- 2 Select **Remove products** to proceed to the product selection dialog box.

- 3 In the Product Selection Uninstall window, select **SPI for HP SE SRM** and click **Next**. The Product Selection Uninstall window opens.



- 4 Select **Remove**.
- 5 Click **Finish** to complete the uninstallation procedure and exit the wizard.

This removes all the configuration files and executables of the HP Storage Essentials SRM SPI from the HPOM server. The HP Storage Essentials SRM SPI node groups, policies, and tools are also removed from the HPOM.

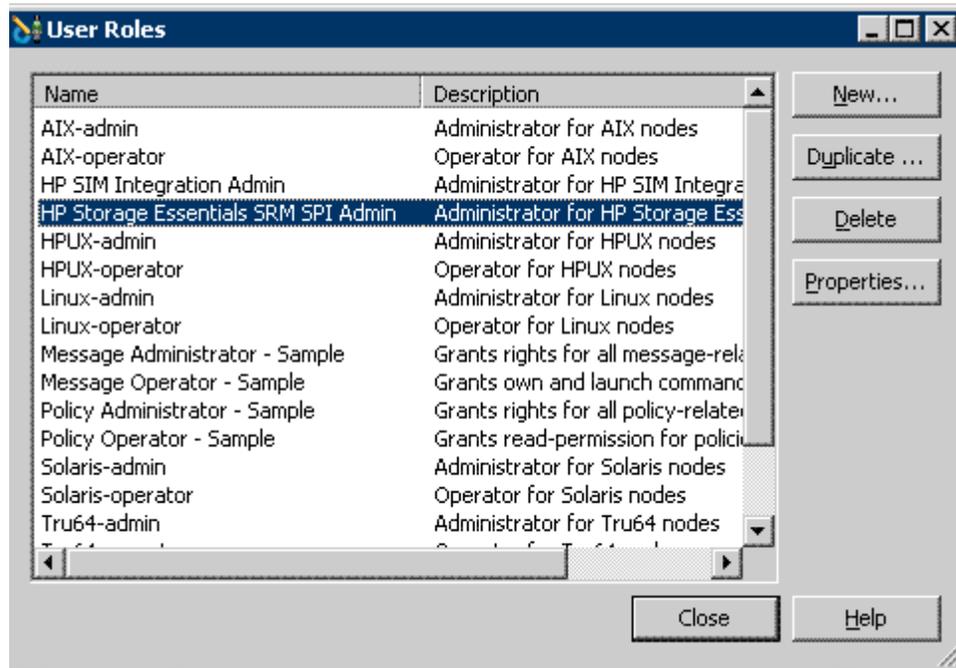
Uninstalling HP Storage Essentials SRM SPI Components from HPOM

Most of the components of the HP Storage Essentials SRM SPI in HPOM are automatically removed during the uninstallation of the product. However, the HP Storage Essentials SRM SPI Admin user role must be removed manually.

Removing HP Storage Essentials SRM SPI User Roles

To remove the HP Storage Essentials SRM SPI user roles, follow these steps:

- 1 Select **Actions > Configure > User Roles**. You can also click **User Roles Configuration Editor**, which is located on the menu bar of the main HPOM. The User Roles window opens.



- 2 Select **HP Storage Essentials SRM SPI Admin**, and click **Delete**.

6 Troubleshooting

Start by checking the following to verify that the HP Storage Essentials SRM SPI environment is installed and configured correctly:

- Make sure that the HP Storage Essentials SRM SPI is installed properly. For more information, see [Installing the HP Storage Essentials SRM SPI](#) on page 20.
- 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 appearing 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.

If the problem persists, refer to the following list of common problems and their solutions.

Error Messages and Solutions

No HP SE SRM service monitoring events arrive on the HPOM Message Browser console

Solution:

- Make sure that the connection between HPOM and the HP SE SRM CMS and the CIM Extension nodes is up and running.
- Verify that the HPOM agent is correctly installed and configured on the management server, and the HPOM agent processes (especially the control agent and message agents) are running.

- Make sure that HP SE SRM CMS and CIM Extension nodes are added to the appropriate node groups (see [Task 2: Assign Nodes to the HP SE SRM Node Group](#) on page 27).

HP SE SRM services are not visible in the HPOM console

Solution:

- Make sure that the connection between the HPOM and the HP SE SRM CMS nodes is up and running.
- Verify that the HPOM agent is correctly installed and configured on the management server, and the HPOM agent processes (especially the control agent) are running.
- If the HP SE SRM CMS credentials are invalid, there might be error messages in the service discovery log at `<OvAgentDir>\log\javaagent.log` on the HP SE SRM CMS node indicating authentication failures.
- Make sure that the Service Discovery policies present in **Policy Management > Policy Groups > HP Storage Essentials SRM > Service Discovery** are deployed on the HP SE SRM CMS nodes. To check whether the policies are correctly deployed, right-click the node, select **View > Policy Inventory**, and ensure that the Service Discovery policies are present. You can also check the service discovery log at `<OvAgentDir>\log\javaagent.log` on the HP SE SRM CMS node for error messages.

SHS-related tools fail on non-root HTTPS node; says cannot open SPI_SE.xml

When the HPOM agent is migrated from root user to non-root user, the Version Verify tools fail with the following error.

```
Cannot open collector output file /tmp/SPI_SE/SPI_SE.xml for writing.
```

Solution:

If the HPOM agent is migrated from root user to non-root user, delete or rename the HP Storage Essentials SRM SPI files/directories from /tmp on the nodes that were created by root user.

Enable logging for event forwarding

To enable logging in order to trace the processing do the following:

- 1 Stop forwarding HP SE SRM events to HPOM.
- 2 Open the file
`<OvAgentDir>\bin\instrumentation\HPSESPI_LogConf.prp` for editing
and modify the value of Threshold to 10.
- 3 Start forwarding HP SE SRM events to HPOM.

The file `<OvAgentDir>\log\HPSESPI\HPSESPI_Debug.log` is created to assist with debugging.

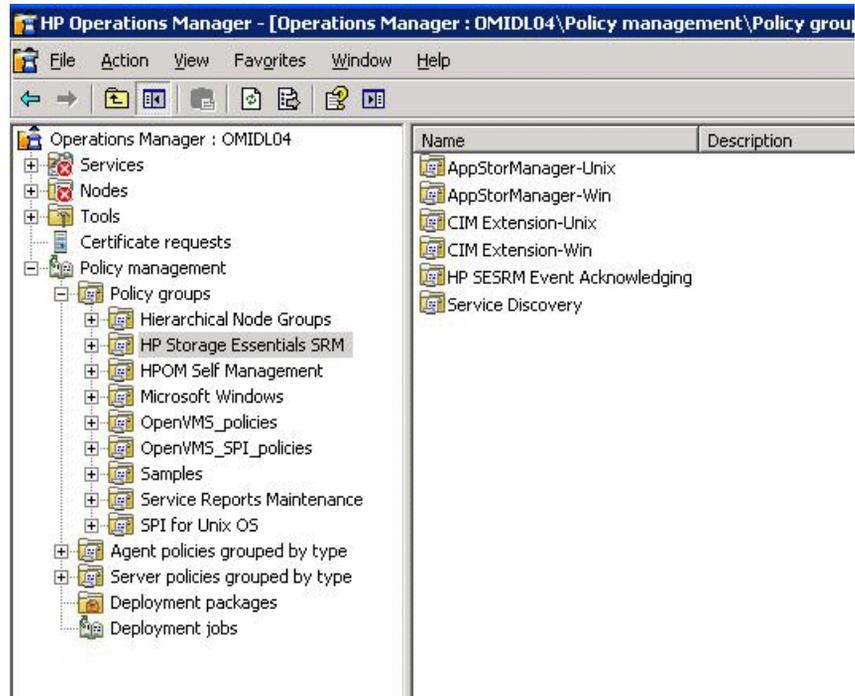


`<OvAgentDir>\log\HPSESPI\HPSESPI_Events.log` has all the events forwarded from HP SE SRM to HPOM logged in it.

A HP Storage Essentials SRM SPI Policy Groups

The high-level HP Storage Essentials SRM policy groups are available in HP Storage Essentials SRM SPI policy groups.

The policies provided with the HP Storage Essentials SRM SPI are grouped under the HP SE SRM policy group as shown in the following figure.



Messages generated by the HP Storage Essentials SRM SPI policies are assigned an HPOM severity level as defined in the policy groups. By default, all messages generated by an HP Storage Essentials SRM SPI policy belong to the HPSESRMSPI-StorageEssentials_SRM message group.

Policies in the AppStorManager and CIM Extension policy groups for the indicated operating systems monitor the status of the AppStorManager service running on HP SE SRM CMS nodes, and the HP SE SRM CIM Extension service running on the HP SE SRM managed nodes. These policies generate messages to indicate any status change in the monitored services.

Policies in the Service Discovery policy group discover the SE SRM services when deployed on HP SE SRM CMS nodes.

Table 13 List of policies in the HP Storage Essentials SRM SPI policy groups

Policy Group	Policy Name	Description	Policy Type
AppStorManager-Unix	HPSESRMSPI-AppStorManager-Unix	Monitor HP Storage Essentials SRM AppStorManager service on Unix.	Measurement Threshold
AppStorManager-Win	HPSESRMSPI-AppStorManager-Win	Monitor HP Storage Essentials SRM AppStorManager service on Windows	Measurement Threshold
CIM Extension-Unix	HPSESRMSPI-CIM Extension-Unix	Monitors HP SE SRM CIM Extension service on Unix	Measurement Threshold
CIM Extension-Win	HPSESRMSPI-CIM Extension-Win	Monitors HP SE SRM CIM Extension service on Windows	Measurement Threshold
Service Discovery	HPSESRMSPI-Storage Essentials_SRM_Services	Discovers services of the hosts managed by the SE SRM AppStorManager	Service Auto-discovery



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 not present or only the extension to the WMI service is present on a Windows managed node.

Index

C

chargeback, 10
CIM, 10
CIM Extension, 84
CMS, 12

D

DMTFs, 10

E

Event Listener
 Stop, 50
events, 61

G

groups
 policy, 13
 tool, 13

H

HPOM, 12
 administrator, 69
 agent, 27, 30
HP SIM
 credentials, 33
 password, 34
 user name, 34

HP Storage Essentials SRM, 9, 64
 AppStorManager, 71
 SPI, 12, 20, 33, 52, 54, 64, 66, 76, 78
 Admin, 69
 applications, 41
 credentials, 33
 instrumentation, 71
 instrumentation scripts, 25
 service discover policy, 67
 user roles, 78

M

management
 backup, 10
 integrated storage, 11
 NAS, 10
 performance, 10
 soft quota, 9
 utilization, 9

Message Group, 62

messages, 61, 83

MIBs, 10

MIFs, 10

N

Node, 62

P

policies, 84

R

requirements
 disk space, 16
 software, 17

rules
 calculation, 65
 status propagation, 65

S

Service Discovery, 13, 35, 66
service map, 64, 66
SE SRM, 9
Severity, 61
SMI-S, 10
SNMPs, 10

T

tools group
 AppStorManager, 55
 CIM Extension, 58
 HPSESRMSPI Utils, 59

V

viewing services, 66
Visualization, 9

W

WBEM, 10

We appreciate your feedback!

If an email client is configured on this system, by default an email window opens when you click on the bookmark “Comments”.

In case you do not have the email client configured, copy the information below to a web mail client, and send this email to **docfeedback@hp.com**

Product name:

Document title:

Version number:

Feedback:

We appreciate your feedback!

If an email client is configured on this system, by default an email window opens when you click on the bookmark “Comments”.

In case you do not have the email client configured, copy the information below to a web mail client, and send this email to **docfeedback@hp.com**

Product name:

Document title:

Version number:

Feedback:

We appreciate your feedback!

If an email client is configured on this system, by default an email window opens when you click on the bookmark “Comments”.

In case you do not have the email client configured, copy the information below to a web mail client, and send this email to **docfeedback@hp.com**

Product name:

Document title:

Version number:

Feedback: