Hewlett Packard Enterprise

HPE Storage Management Pack for System Center v4.5 User Guide

Abstract

This guide provides information about HPE Storage Management Pack for System Center Operations Manager.

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Contents

Understanding Management Pack..... 6

New features in version 4.5 6
Selecting an Event Delivery method..... 6
Using Event Flow model..... 6
Using SNMP..... 7
Using WMI..... 7
Block diagram..... 7

Installing Management Pack..... 9

System requirements for installation..... 9
Product support..... 9
Installation prerequisites for HPE Storage Management Pack..... 10
Installing OpsMgr..... 11
Installing SNMP..... 12
SNMP Support Matrix..... 12
Pre-installation setup activities for SNMP..... 12
Installing the SNMP software..... 12
Installing WMI..... 13
WMI Support Matrix..... 13
Installing WMI..... 13
Installing the Management Pack software..... 13
HPE Storage Management Pack for System Center..... 13
Installing the HPE Storage Management Pack software..... 13
Upgrading HPE Storage Management Pack for System Center..... 19
Modifying the HPE Storage Management Pack software..... 20
Repairing the HPE Storage Management Pack software..... 24
Uninstalling HPE Storage Management Pack for System Center..... 27
Silently installing HPE Storage Management Pack for System Center..... 30
Silently modifying HPE Storage Management Pack for System Center..... 31
Silently repairing HPE Storage Management Pack for System Center..... 31
Silently upgrading HPE Storage Management Pack for System Center..... 32
Silently uninstalling HPE Storage Management Pack for System Center..... 32
Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool..... 32
Adding HPE Storage devices in the HPE Storage Management Pack User Configuration Tool..... 32
Modifying credentials of HPE Storage devices in HPE Storage Management Pack user configuration tool..... 35
Removing discovered HPE Storage device from the HPE Storage Management Pack user configuration tool..... 36
Configuring the Management Pack for HPE 3PAR StoreServ Storage..... 37
Processing Events/Alerts for HPE 3PAR StoreServ Storage..... 37
Diagram View of the HPE 3PAR StoreServ Storage..... 39
State View of the HPE 3PAR StoreServ Storage..... 43
Capacity Dashboard for HPE 3PAR StoreServ Storage..... 43
Tabular representation of Capacity Summary..... 44
Graphical representation of Capacity Summary..... 45
Health Dashboard for HPE 3PAR StoreServ Storage..... 46
Health Summary..... 47

Alerts Summary ... 48
Accessing Capacity Dashboard from a remote OpsMgr Console ... 50
Configuring the Management Pack for HPE StoreVirtual Storage ... 50
Processing Events/Alerts for HPE StoreVirtual Storage ... 50
Diagram View of the HPE StoreVirtual Storage ... 51
State view of the HPE StoreVirtual Storage ... 53
Configuring the Management Pack for HPE 3PAR StoreServ File Controller ... 53
Processing Events/Alerts for HPE 3PAR StoreServ File Controller ... 54
Diagram View of the HPE 3PAR StoreServ File Controller ... 55
State View of HPE 3PAR StoreServ File Controller ... 57
Configuring the Management Pack for HPE MSA Storage ... 57
Processing Events/Alerts for HPE MSA Storage ... 57
Diagram View of the HPE MSA Storage System ... 59
Configuring the Management Pack for HPE StoreEasy 1000 and HPE StoreEasy 3000 Storage ... 63
Processing Events/Alerts for HPE StoreEasy 1000 and HPE StoreEasy 3000 Storage ... 63
Configuring the Management Pack for HPE XP 9000 Storage ... 64
Processing Events/Alerts for HPE XP 9000 Storage ... 64
Configuring the Management Pack for HPE StoreOnce Backup ... 66
Processing Events/Alerts for HPE StoreOnce Backup ... 66
Diagram View of the HPE StoreOnce Backup Storage System ... 67
State View of HPE StoreOnce Backup Storage System ... 70
Configuring the Management Pack for HPE StoreEver Tape Libraries ... 71
Processing Events/Alerts for HPE StoreEver Tape Libraries ... 71

Configuration for monitoring device ... 73

SNMP ... 73
Configuration of SNMP service ... 73
Configuration of OpsMgr Server to process SNMP traps ... 73
Configuring SNMP service ... 74
Getting SNMP Traps from HPE 3PAR StoreServ Storage ... 74
Getting SNMP traps from HPE StoreVirtual Storage System ... 75
Enabling an SNMP agent ... 75
Adding an SNMP client ... 75
Enabling SNMP traps ... 76
Getting SNMP traps from HPE MSA Storage ... 76
Monitoring SNMP traps for G3 and G4 arrays ... 76
Getting SNMP traps from HPE StoreOnce Backup ... 77
Adding an SNMP trap destination ... 77
Editing an SNMP trap destination ... 77
Removing an SNMP trap destination ... 77
Getting SNMP traps from HPE XP 9000 ... 77
Getting SNMP traps from HPE StoreEver Tape Libraries ... 78
Adding an SNMP trap ... 78
Editing an SNMP trap ... 78
Removing an SNMP trap ... 79
WMI events ... 79
Discovering HPE StoreEasy 1000 and HPE StoreEasy 3000 storage ... 79
Discovery of HPE 3PAR StoreServ File Controller ... 80
Getting WMI Events from HPE 3PAR StoreServ File Controller ... 80

Using the Management Pack software ... 81

View Discovered Inventory ... 81
Disabling Discoveries ... 84
Monitoring HPE Services Health ... 85

Service Health Monitors....85
HPE Storage SMI-S CIM Service Health Monitor....86
Monitoring console....86
Event handling....86
Events Details tab....86
Event Parameters....86
Using OpsMgr Views....86
HPE Storage....86
Alerts....88
Alert Details tab....88
Product Knowledge tab....88
Alerts and views....89
HPE Storage....89

Using HPE Storage Management Pack PowerShell Cmdlets....90
Prerequisites....90
Using HPE Storage Management Pack PowerShell Cmdlets....90
List of PowerShell Cmdlets for HPE Storage Management Pack....90

Frequently Asked Questions....93
HPE Systems Insight Manager....93
Platform Support....93
Known Behavior....94
Troubleshooting....95
Installer....95
SNMP....96
Diagram View....96
Collection Point Server....97
Dashboards....97
Devices....98
HPE 3PAR StoreServ....98
HPE MSA....99
HPE StoreEver Tape Library....99
Alerts....99
HPE 3PAR StoreServ alerts are not displayed in the SCOM console....99

Websites....106

Support and other resources....107
Accessing Hewlett Packard Enterprise Support....107
Accessing updates....107
Hewlett Packard Enterprise Authorized Resellers....107
Support Information....108
Customer self repair....108
Remote support....108
Warranty information....109
Regulatory information....109
Documentation feedback....109

Glossary....110

Understanding Management Pack

This chapter introduces you to the concepts of HPE Storage Management Pack. The HPE Storage Management Pack for System Center is designed to display topology and to receive alerts, events, capacity, and health information from the HPE Storage portfolio. This information will be shown in Operations Manager under different views.

New features in version 4.5

The HPE Storage Management Pack for System Center 4.5 supports the following:

- HPE StoreVirtual 4000 and StoreVirtual VSA v12.7
- HPE StoreVirtual 3200 v13.5
- HPE 3PAR StoreServ 9450
- HPE 3PAR StoreServ 20800 R2/20840 R2/20850 R2
- HPE MSA Storage 2050
- Monitoring of File Persona components for HPE 3PAR StoreServ Storage

Selecting an Event Delivery method

The table below lists storage environments and associated event delivery methods.

Table 1: Event Delivery Methods

Storage Environment	Event Delivery Method
HPE 3PAR StoreServ Storage, HPE MSA Storage, HPE StoreVirtual Storage, HPE XP 9000 Storage, HPE StoreEver Tape Library, and HPE StoreOnce Backup	SNMP
HPE application service health	OpsMgr Agent should be installed on same server as the Application
HPE StoreEasy 1000 and HPE StoreEasy 3000 Storage, HPE 3PAR StoreServ File Controller	OpsMgr Agent must be installed on HPE StoreEasy 1000 and HPE StoreEasy 3000 Storage, HPE 3PAR StoreServ File Controller as part of a manual discovery to subscribe and listen to WMI events.

NOTE:

If you are using the XML event delivery method, the TCP port is automatically unblocked. The default port number is 8945.

Using Event Flow model

NOTE:

Before you install the software, you must plan the deployment. Depending on the types of storage products you are using, you must identify the locations where you want to install and run the various management components.

Using SNMP

In the SNMP Event Flow model, you need one to three systems to configure events to flow from the Storage Device Manager (Command View Tape Library software or equivalent) to System Center. These functions can run on the OpsMgr Server, or can be distributed as required throughout your environment. **Figure 1: SNMP event flow model** on page 7 shows the SNMP Event Flow model for HPE 3PAR StoreServ Storage, HPE StoreVirtual Storage, HPE StoreOnce Backup, HPE XP 9000 Storage, HPE MSA Storage, and HPE StoreEver Tape Libraries. For more information related to SNMP, see **Installing Management Pack** on page 9.

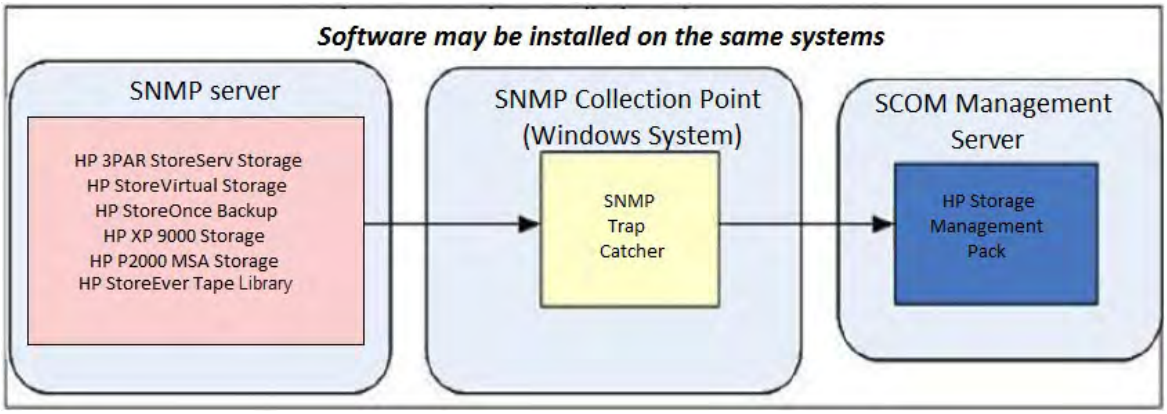


Figure 1: SNMP event flow model

NOTE:

When using SNMP collection points, the HPE Storage Management Pack should be installed on collection point server where the OpsMgr agent is deployed.

Using WMI

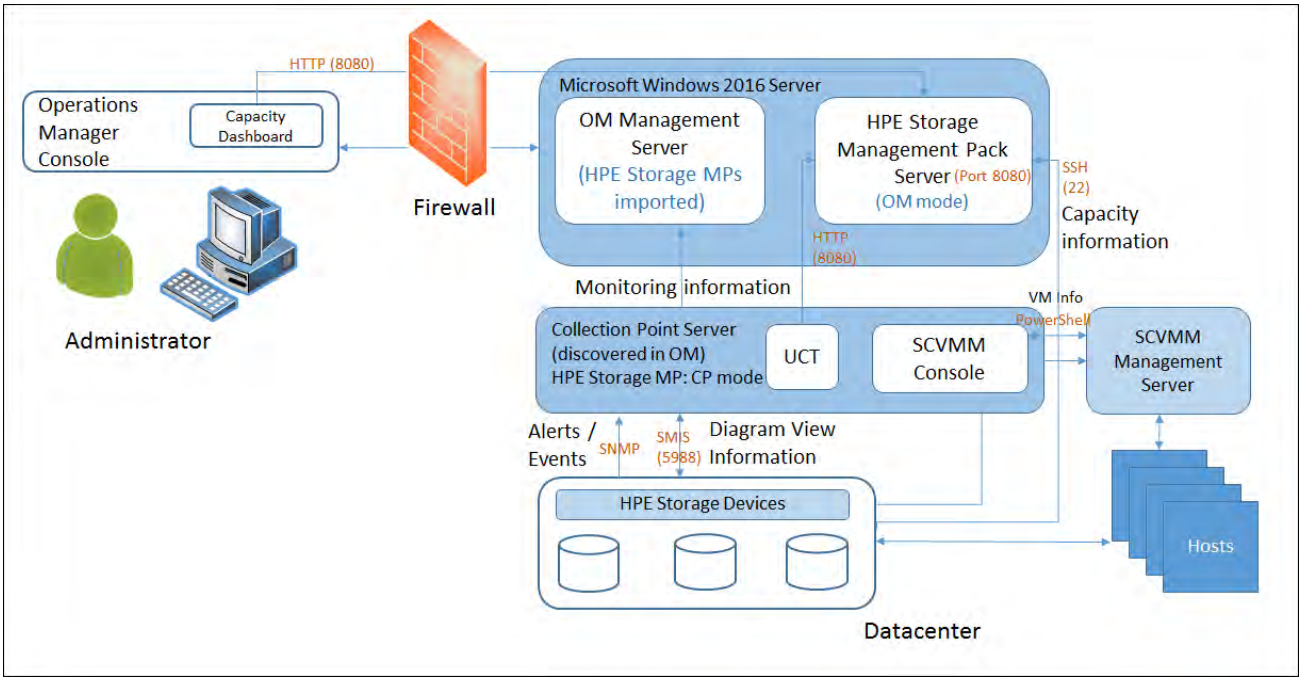
In the WMI (Windows Management Instrumentation) event flow model, for configuring events to flow from the device to System Center, the device must be discovered from OpsMgr and the agent must be installed on HPE StoreEasy 1000 Storage, HPE StoreEasy 3000 Storage, and HPE 3PAR StoreServ File Controller.

HPE StoreEasy 1000 Storage/HPE StoreEasy 3000 Storage/HPE 3PAR StoreServ File Controller must be in a healthy state in the operations console to enable monitoring.

For more information related to WMI, see **Installing Management Pack** on page 9.

Block diagram

The following diagram shows the configuration and communication protocols used for monitoring HPE 3PAR StoreServ Storage in SCOM Collection Point environment.


HTTP (8080)
Operations Manager Console
Capacity Dashboard
Firewall
Microsoft Windows 2016 Server
OM Management Server (HPE Storage MPs imported)
HPE Storage Management Pack Server (Port 8080) (OM mode)
SSH (22)
Capacity information
HTTP (8080)
Monitoring information
VM Info PowerShell
Collection Point Server (discovered in OM) HPE Storage MP: CP mode
UCT
SCVMM Console
SCVMM Management Server
Administrator
Alerts / Events
SNMP
SMIS (5988)
Diagram View Information
HPE Storage Devices
Hosts
Datacenter

Installing Management Pack

This chapter describes how to install the HPE Storage Management Pack in your storage environment, along with other System Software.

System requirements for installation

Hardware Requirements: There are no specific hardware requirements for Management Pack. It will be installed as a plug-in over the System Center. The HPE Storage Management Pack can be installed on the collection points where only OpsMgr agents are deployed and OpsMgr is not installed.

SCOM Support: HPE Storage Management Pack supports following versions of Operations Manager:

- Operations Manager 2016
- Operations Manager 2012 R2

OS Support: The following Operating Systems are supported for HPE Storage Management Pack installation on the Operations Manager Server:

Operating System	Language Supported
Microsoft Windows Server 2012 R2	English and Japanese
Microsoft Windows Server 2012	English
Microsoft Windows Server 2016	English

Collection Point installation of HPE Storage Management Pack is supported on all the operating systems that are supported by SCOM.

Product support

The HPE Storage Management Pack supports the following Storage Devices:

Storage System	Supported Firmware
HPE 3PAR StoreServ Storage • StoreServ 8000 • StoreServ 20000 • StoreServ 7000 • StoreServ 10000 • StoreServ 9450 • StoreServ 20800 R2/20840 R2/20850 R2	For 3PAR 8000 & 20000 systems, minimum IOS v. 3.2.2 or later. For 3PAR 7000 & 10000 systems, IOS v.3.2.1 or later. For 3PAR StoreServ Storage 9450 & 20800 Systems, IOS v3.3.1 or later
HPE StoreVirtual Storage • StoreVirtual VSA • StoreVirtual 3200 • StoreVirtual 4000	For StoreVirtual 3200 systems: LHN OS 13.0, 13.1 & 13.5. For StoreVirtual 4000 and VSA: LHN OS v.12.5, 12.6 & 12.7.

Table Continued

Storage System	Supported Firmware
HPE StoreOnce Backup • StoreOnce 6600 • StoreOnce 6500 • StoreOnce B6200 • StoreOnce 5500/5100 • StoreOnce 4900/4700/4500 • StoreOnce 4400/4200 • StoreOnce 3500/3100 • StoreOnce VSA	For StoreOnce 6600, v3.14 onwards. For StoreOnce 6500, v3.12.2 onwards. For StoreOnce B6200, V3.11.7 onwards. For StoreOnce 5500/5100, v3.14.1 onwards. For StoreOnce 4900/4700/4500, v3.12.2 onwards. For StoreOnce 4400/4200, v3.11.7 onwards. For StoreOnce 3500/3100, v3.14.1 onwards. For StoreOnce VSA, v3.13.5 onwards.
HPE MSA Storage • MSA 2050 • MSA 2042 • MSA 2040 • MSA 1040	For MSA 2050, v VL100R004 or later For MSA 2042, v.GL220P008 or later. For MSA 2040 & 1040, v.GL210 and later.
HPE StoreEasy Storage • StoreEasy 1000 • StoreEasy 3000	For Gen 9 based platforms, WMI Provider v. 10.30.0.0. For Gen 8 based platforms, WMI Provider v.9.5.0.0.
HPE StoreEver Tape Library	ESL G3 & MSL Series
HPE XP Storage • XP7 • XP24000 • HPE P9000	For XP7, v.80-03-02-00/00 and later. For P9000, v.70-06-01-00/00 and later. For XP 24000, v.60-08-02-00/00 and later.
HPE 3PAR StoreServ File Controller V2 & V3	For Gen 9 based platforms, WMI Provider v. 10.30.0.0 For Gen 8 based platforms, WMI Provider v.9.5.0.0

Installation prerequisites for HPE Storage Management Pack

The table below lists the software components that you must install before installing the HPE Storage Management Pack.

Table 2: Installation prerequisites

Software	Location of software
.NET Framework 4.1, and 4.5 depending on the operating system	It is the system where OpsMgr is installed.It can also be installed on a machine which acts as a collection point with the agent installed on it.
OpsMgr	It is on the Windows Server.

Table Continued

Software	Location of software
SNMP Service, SNMP Trap Service	It is in your storage environment. For more information, see **Installing SNMP** on page 12.
WMI Service	It runs on the StoreEasy1000/StoreEasy 3000 servers/HPE 3PAR StoreServ File Controller. For more information, see **Installing WMI**.
Windows Power Shell v2.0 or v3.0	It is on both OpsMgr and Collection Point servers, where HPE Storage Management Pack is installed.
SMI-S Service	It is on HPE 3PAR StoreServ Storage and on HPE MSA Storage. Ensure that in the http mode, the SMI-S service is running on the 5989port.
SCVMM Console 2012 R2	It is the system where OpsMgr 2012 R2 is installed, to display Virtual Machine information in Diagram view for HPE 3PAR StoreServ and HPE StoreVirtual storage devices.
HPE Fabric Management Add-in 2.0 or later for SCVMM	Install the Server Module of HPE Fabric Management Add-in on the SCVMM management server. For more information, see **HPE Fabric Management Add-in**.
StoreVirtual ReST Service	It is on HPE StoreVirtual Storage.
Ports required	SCOM Management Server/Collection server uses SSH port 22, to connect to HPE 3PAR StoreServ. Capacity Dashboard uses port 8080, to connect to HPE Storage Management Pack server. SCOM Management Server/Collection server uses port 8081, to connect to HPE StoreVirtual Storage.

NOTE:

- Installation will require permission of an administrator. User should be logged in as a member of Local Administrator or Domain Administrator Group.
- If OpsMgr server is part of Network Resource Pool, or if port 162 is used by an application other than `snmptrap.exe`, then it is recommended to have a collection point server to receive events. For more information, see **Known Behavior** on page 94.
- **Health** dashboard and **Capacity** dashboard may not appear in the Microsoft System Center Operations Manager Web Console.
- State View of the HPE Storage Systems may not appear in the Microsoft System Center Operations Manager Web Console.

Installing OpsMgr

You must install and configure OpsMgr Management Server and Console before installing the HPE Storage Management Pack.

To download OpsMgr 2012 R2, visit the following website:

http://www.microsoft.com/en-us/server-cloud/products/system-center-2012-r2

To download OpsMgr 2016, visit the following website:

https://www.microsoft.com/en-us/cloud-platform/system-center

Installing SNMP

For stand-alone management server without collection point servers, the SNMP Service (including WMI Provider) and the SNMP Trap service must be installed on the management server. For management server with single or multiple collection point servers, the SNMP Service (including WMI Provider) and the SNMP Trap service must be installed on all the collection point servers.

Figure 1: SNMP event flow model on page 7 shows the flow of events using SNMP.

SNMP Support Matrix

You must first install SNMP if you have the following software installed in your environment:

- HPE Storage ESL G3 and MSL Series
- HPE 3PAR StoreServ Storage
- HPE StoreVirtual Storage (formerly known as SAN/iQ)
- HPE XP 9000 Storage
- HPE MSA Storage
- HPE StoreOnce Backup

Pre-installation setup activities for SNMP

Your system consists of an OpsMgr Server and one or more agents. If the system is directly monitored by root management servers, the agent installation is not required. The agents are listed in the **Computers** tab of the Administrator console in the OpsMgr Server. You can add new agents using the **Discovery wizard** in the OpsMgr Administrator Console. Before sending SNMP messages to the agents, you must install the SNMP Service and SNMP Trap service on all agents.

Installing the SNMP software

Prerequisites

Install the SNMP WMI Provider, SNMP Service, and the SNMP Trap service.

Ensure that the `snmp` and `snmptrap` services are running.

Procedure

1. Launch **Server Manager**.
2. Click **Manage** on the Server Manager Dashboard page.
3. Select **Add Roles and Features**.
4. Select **Features** and expand the SNMP service on the right pane.
5. Select the required SNMP service and SNMP WMI Provider. Click **Next**. A confirmation page appears to verify the selection.
6. Click **Install**. The installation wizard starts.
7. Click **Close** to complete the installation.

NOTE:

After successful installation, ensure that the SNMP Service and SNMP Trap service are in `Running` state. For more information on configuring the SNMP Service, see **Configuration of SNMP service** on page 73.

Installing WMI

WMI Support Matrix

To receive the events from HPE StoreEasy 1000, HPE StoreEasy 3000 Storage, and HPE 3PAR StoreServ File Controller WMI service should be running on both the systems.

Installing WMI

WMI is installed by default in the supported operating systems.

For more information on the HPE StoreEasy 1000 and HPE StoreEasy 3000 Storage, see **https://www.hpe.com/us/en/product-catalog/storage/file-storage.hits-12.html**.

For more information on the HPE 3PAR StoreServ File Controller, see **https://www.hpe.com/us/en/product-catalog/storage/file-storage.hits-12.html**.

Installing the Management Pack software

Launch the **HPE OneView for Microsoft System Center 8.3 Master Installer** and select **Install HPE Storage SCOM Integration Kit 4.5** to extract `hpestoragescomkit-4.5.0` folder. It contains:

- HPE Storage Management Pack for System Center
  - HPEStorageManagementPackforSystemCenter.exe
  - HPEStorageMangamentPackSilentInstaller.exe
  - MPConfig.xml
  - MPConfig.xsd

HPE Storage Management Pack for System Center

For monitoring HPE Storage devices, HPE Storage Management Pack must be installed on the Operations Manager server and on the collection point server, if later is configured.

Installing the HPE Storage Management Pack software

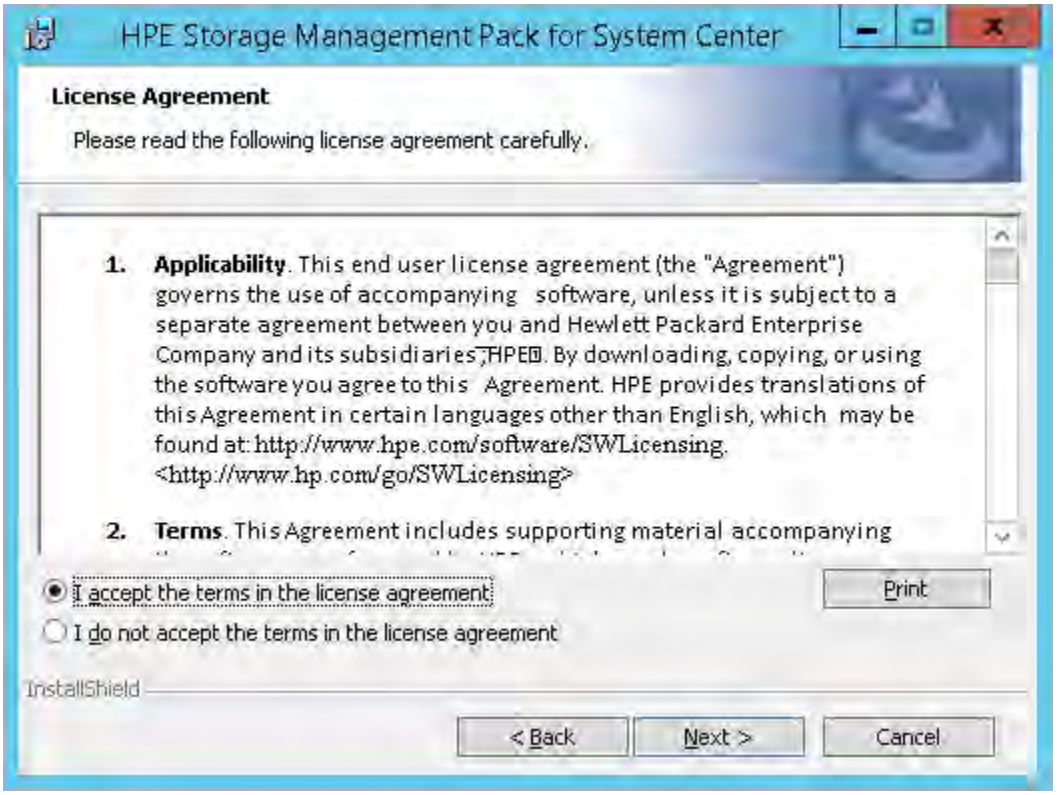
Perform the following steps to install the HPE Storage Management Pack software on the system that you have designated as an OpsMgr Server:

Procedure

1. In **HPE OneView for Microsoft System Center** run `autorun.hta`.
2. Select `Install HPE Storage SCOM Integration Kit` to extract the `hpestoragescomkit-4.5.0` folder.
3. Navigate to **hpestoragescomkit-4.5.0** > **HPE Storage Management Pack for System Center** and run the `HPEStorageManagementPackforSystemCenter.exe` file.

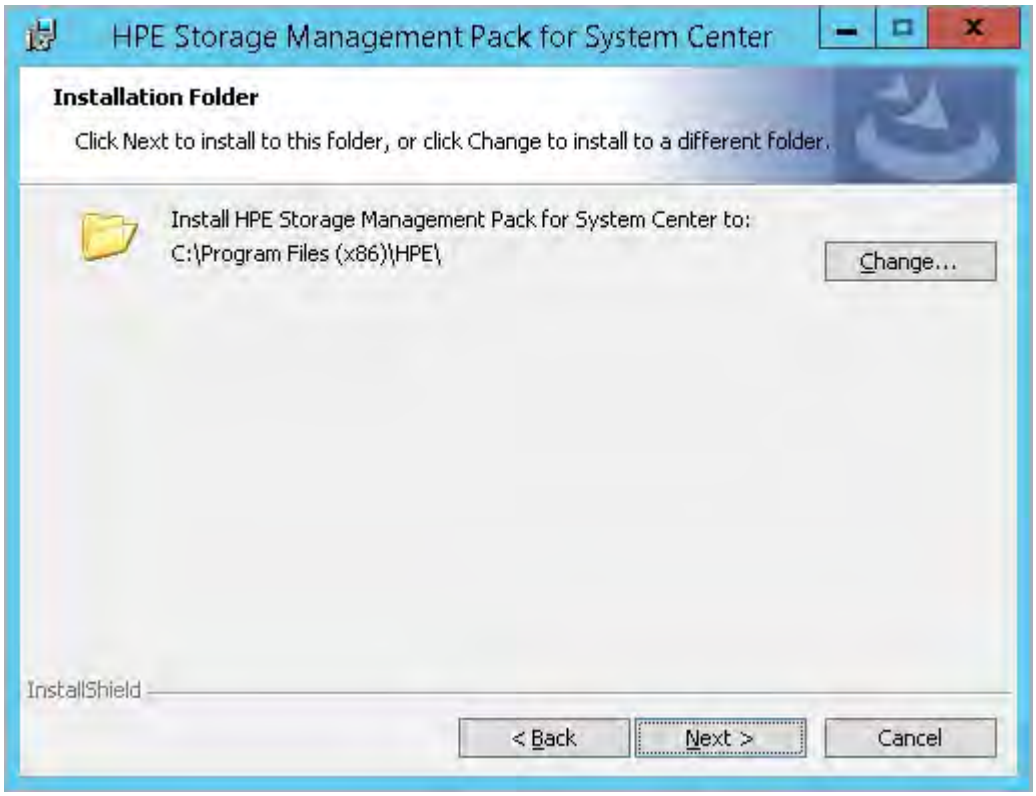
   The Installation wizard starts.
4. Click **Next**.

5. Read the license agreement information and select **I accept the terms in the license agreement**. Click **Next**.



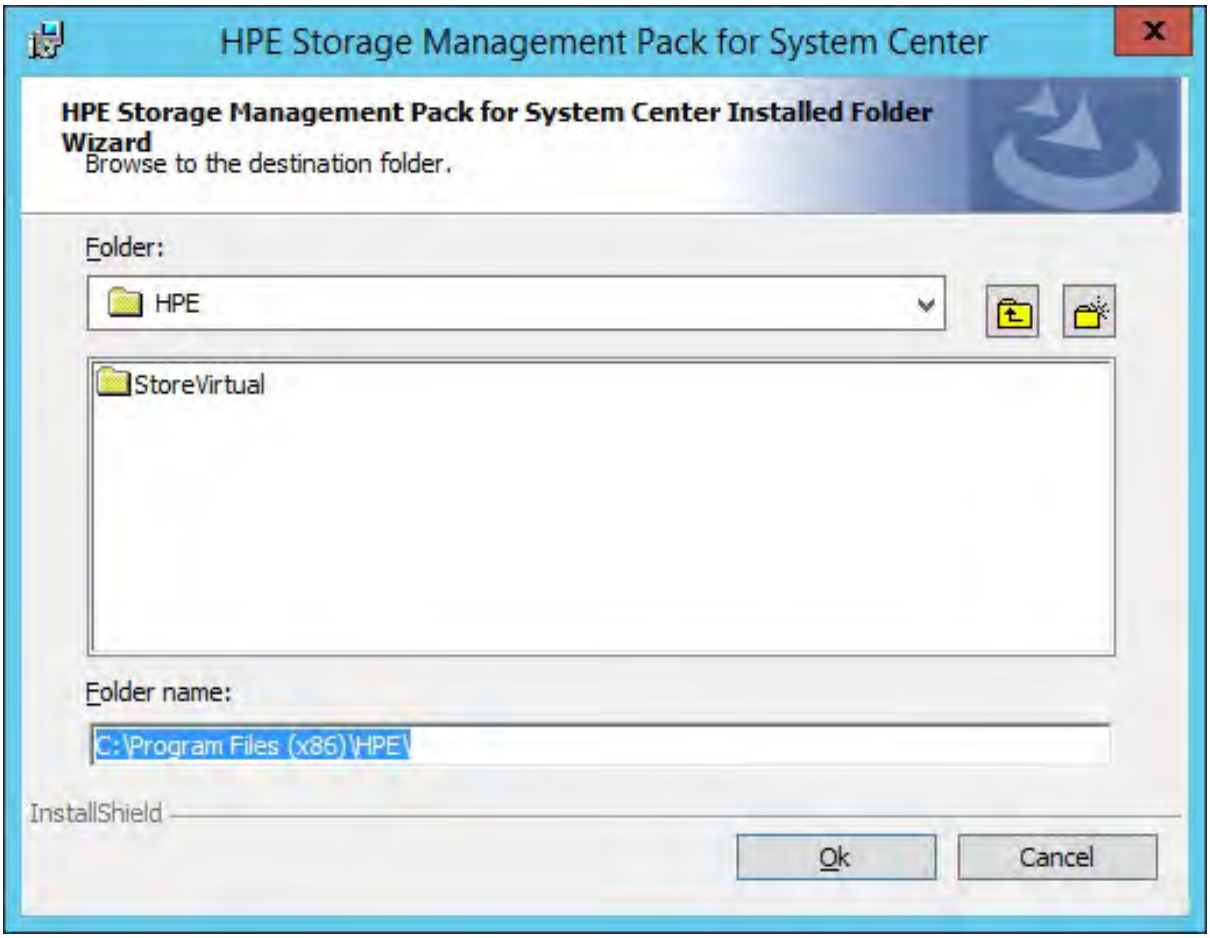
6. Choose one of the following options and click **Next**:

   - Install HPE Storage Management Pack at `C:\Program Files (x86)\HPE\` (default).



   - Click **Change** to install the HPE Storage Management Pack to a different location.

The folder selection screen is displayed.



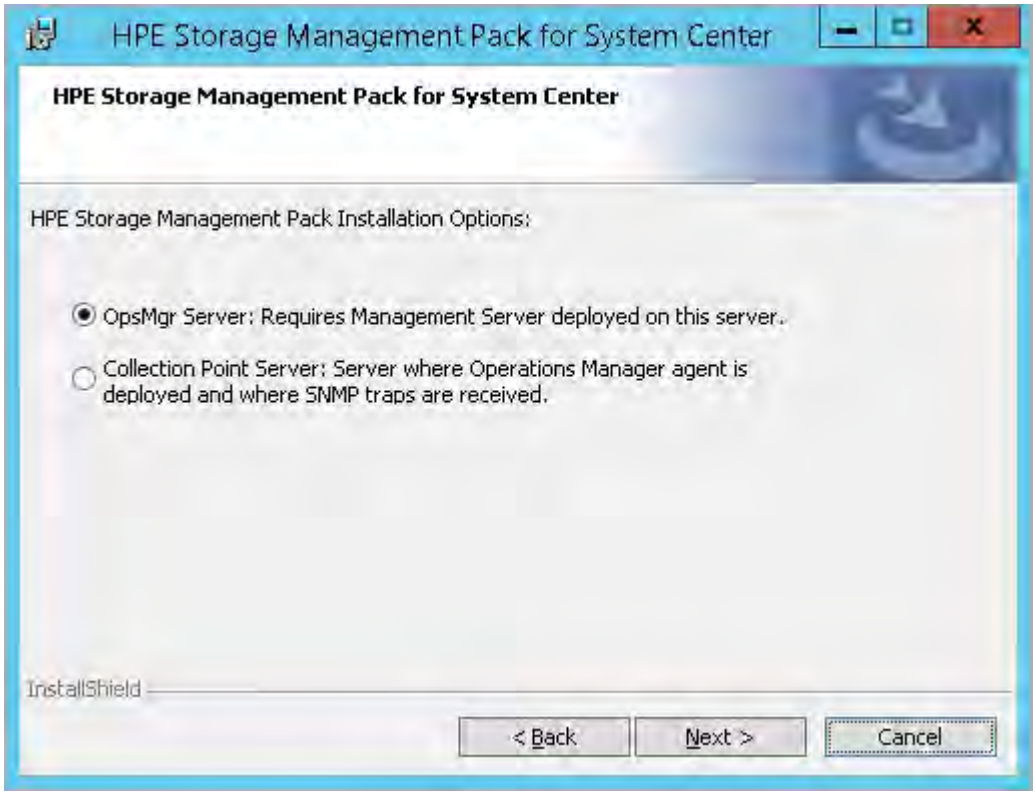
7. Select one of the following options, and click **Next**.

   OpsMgr Server: Server on which the management server is deployed.

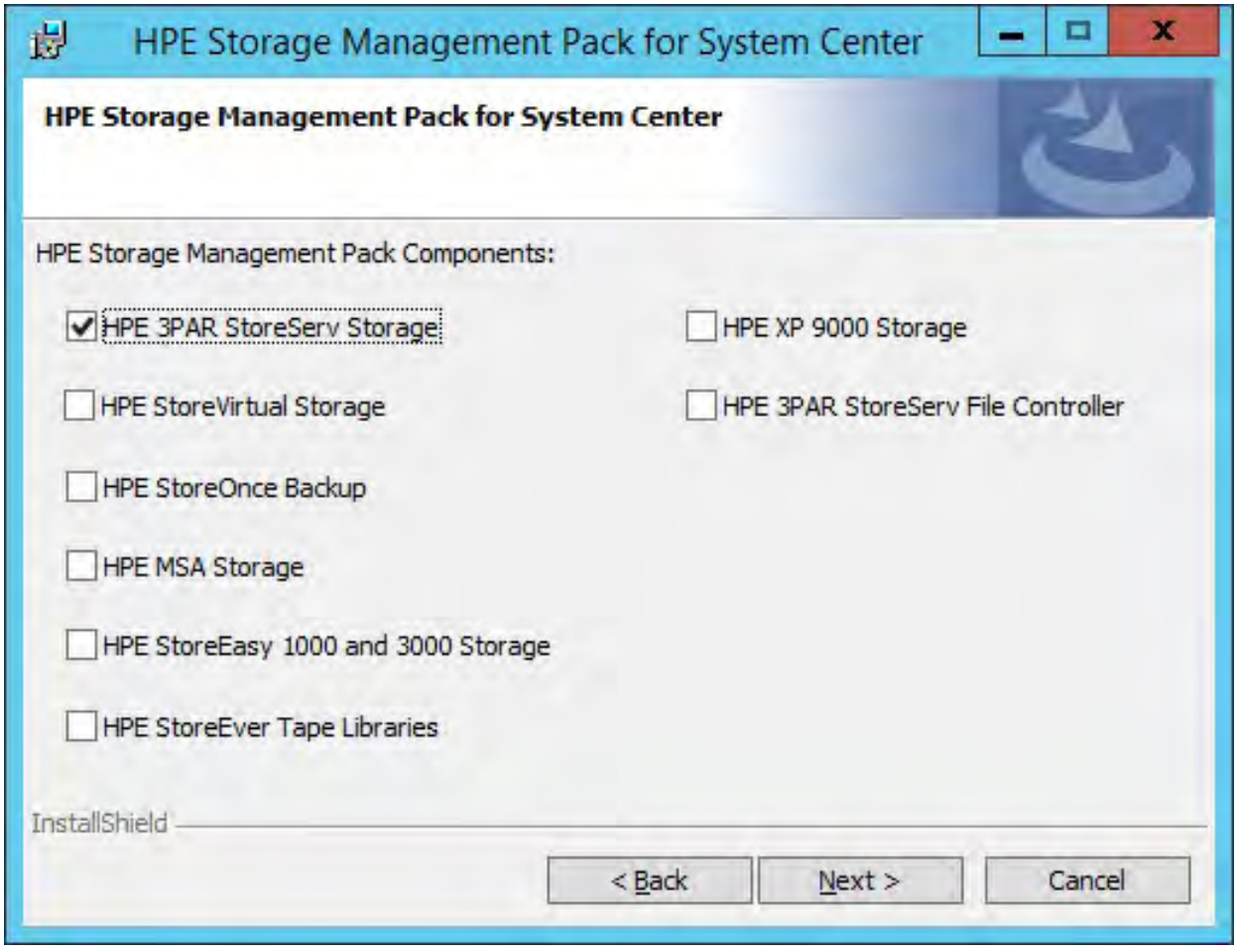
   - **NOTE:**

     HPE Storage Management Pack must be installed on the root management server for OpsMgr 2007 R2 RMS environment.

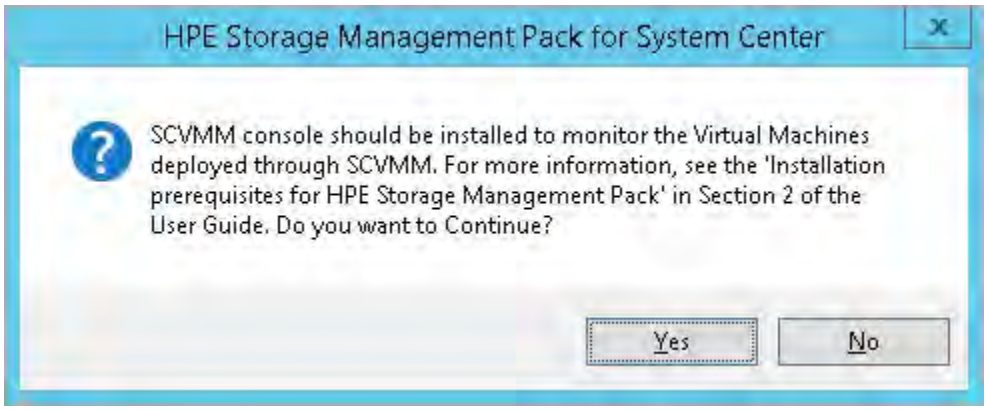
   - Collection Point Server: Server on which the operations manager agent is deployed, and the SNMP traps or notifications are received.



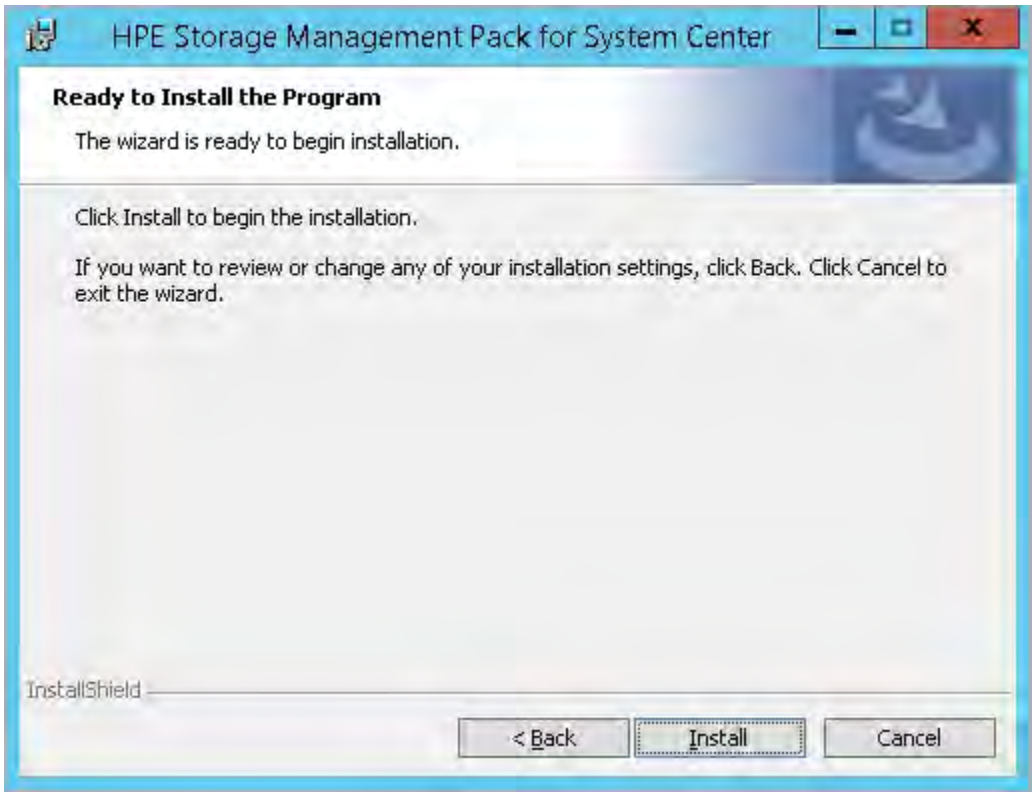
8. Select the check box corresponding to the storage devices that you want to monitor, and click **Next**.



If SCVMM Console is not installed the following pop-up is displayed.



9. Click **Install**.



HPE Storage Management Pack for System Center installation progress is displayed:

NOTE:

The installation of HPE Storage Management Pack takes some time.

10. The installation completion screen is displayed.
11. Click **Finish**.

The registry entries for the 32 and 64 bit systems are generated at `HKEY_LOCAL_MACHINE\SOFTWARE\Hewlett-Packard` and `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Hewlett-Packard` respectively.

NOTE:

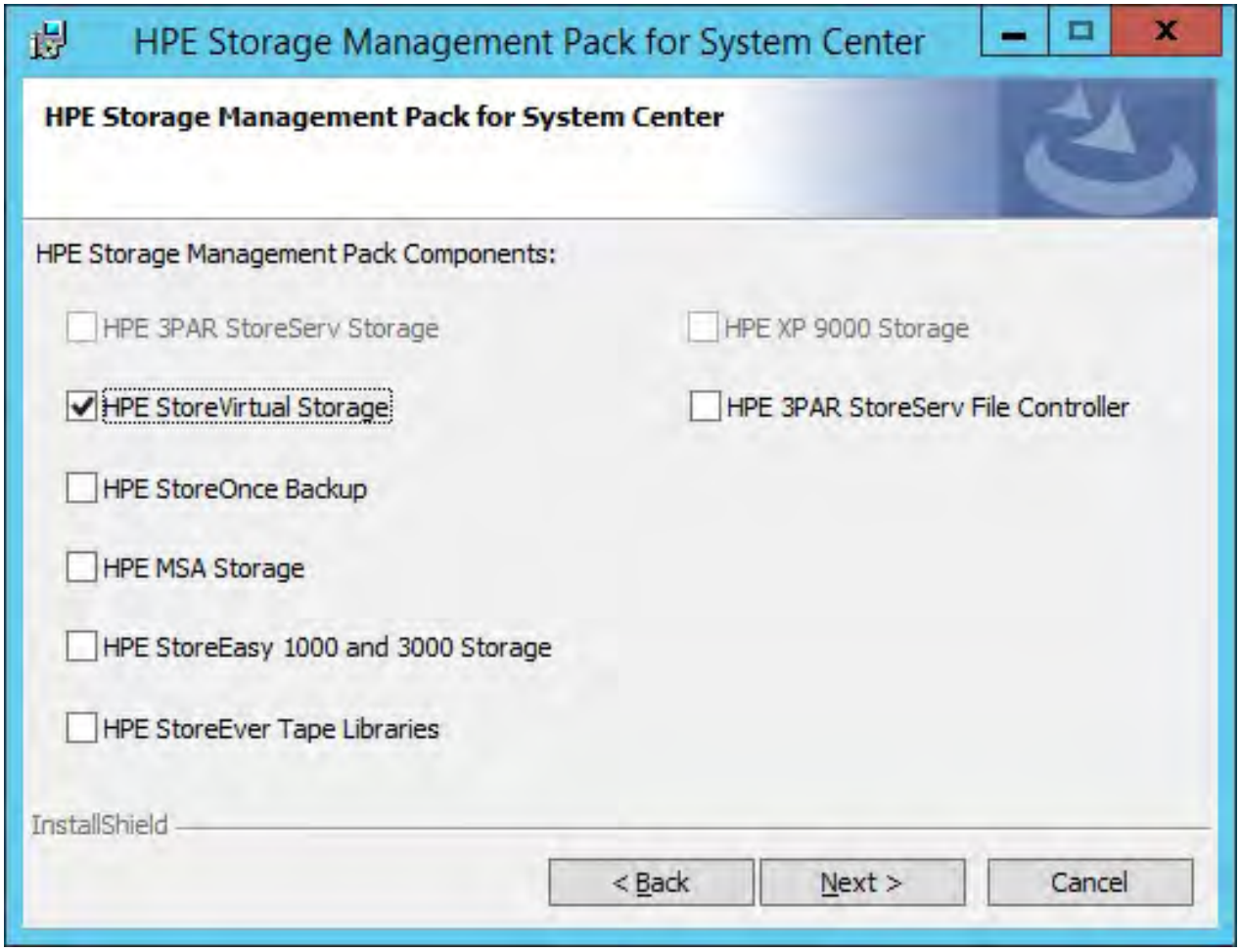
For a 32-bit operating system, the installed files are available at: **~:\Program Files\HPE\HPE Storage management Pack for System Center** directory.

For a 64-bit operating system, the installed files are available at: **~:\Program Files(x86)\HPE\HPE Storage management Pack for System Center** directory.

Upgrading HPE Storage Management Pack for System Center

Perform the following steps to upgrade the HPE Storage Management Pack software:

1. In **HPE OneView for Microsoft System Center** run `autorun.hta`.
2. Select `Install HPE Storage SCOM Integration Kit` to extract the `hpestoragescomkit-4.5.0` folder.
3. Navigate to **hpestoragescomkit-4.5.0** > **HPE Storage Management Pack for System Center** and run the `HPEStorageManagementPackforSystemCenter.exe` file.The Installation wizard starts.
4. Click **Yes**.The Installation wizard starts.
5. On the **Component Selection** screen, the components installed on OpgMgr are selected for upgrade. You can select additional components to install and click **Next**.



NOTE:

- Upgrade is supported from HPE Storage Management Pack for System Center v 4.3 (HPE OneView for Microsoft System Center 8.1).

6. Select next and complete the upgrade.

NOTE:

After upgrade, to clear cache, open the **Operations Manager** console with the `/clearcache` parameter.

For Example:

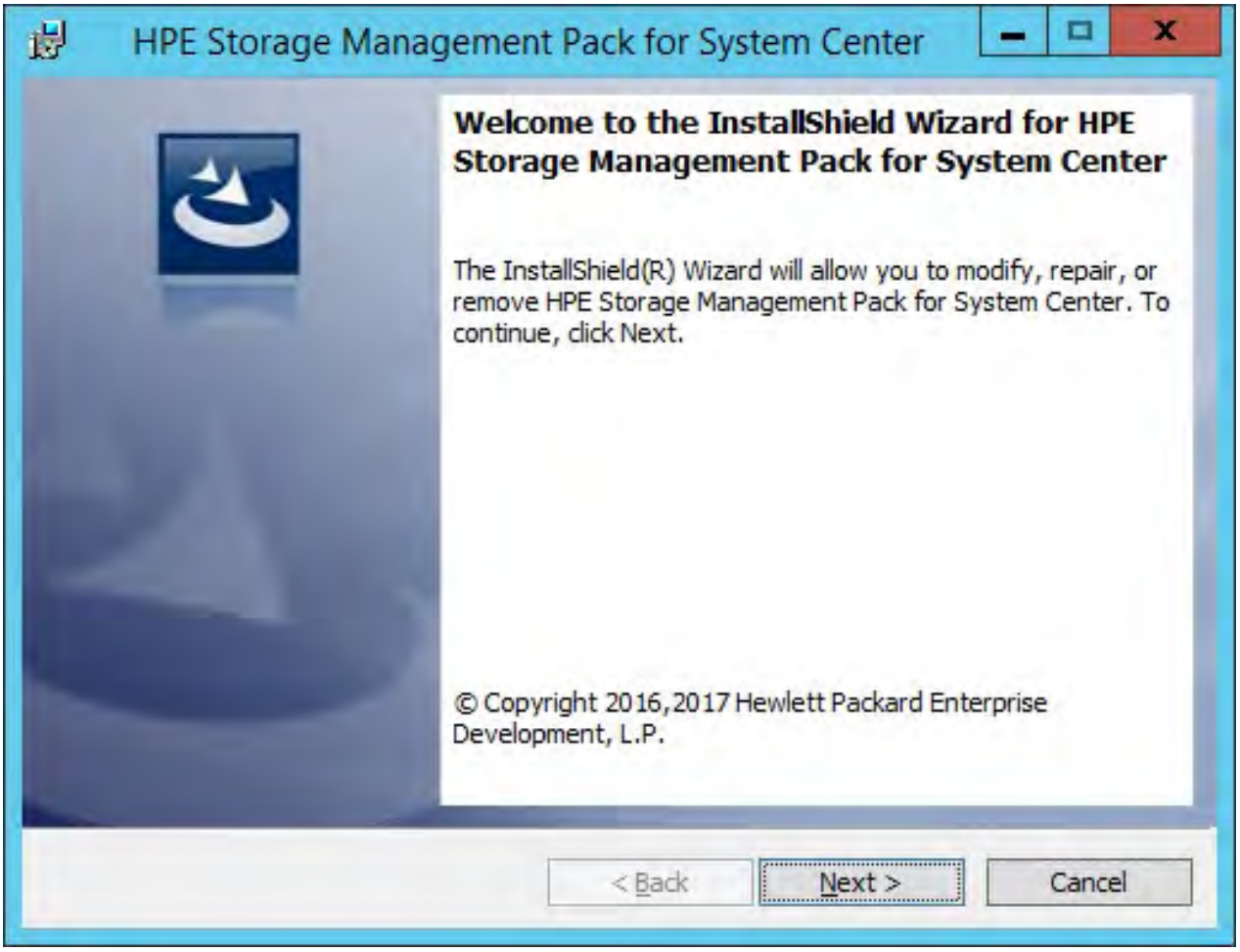
```
C:\Program Files\System Center Operations Manager 2012\Console
\Microsoft.EnterpriseManagement.Monitoring.Console.exe /clearcache
```

Modifying the HPE Storage Management Pack software

Perform the following steps to modify the management pack software:

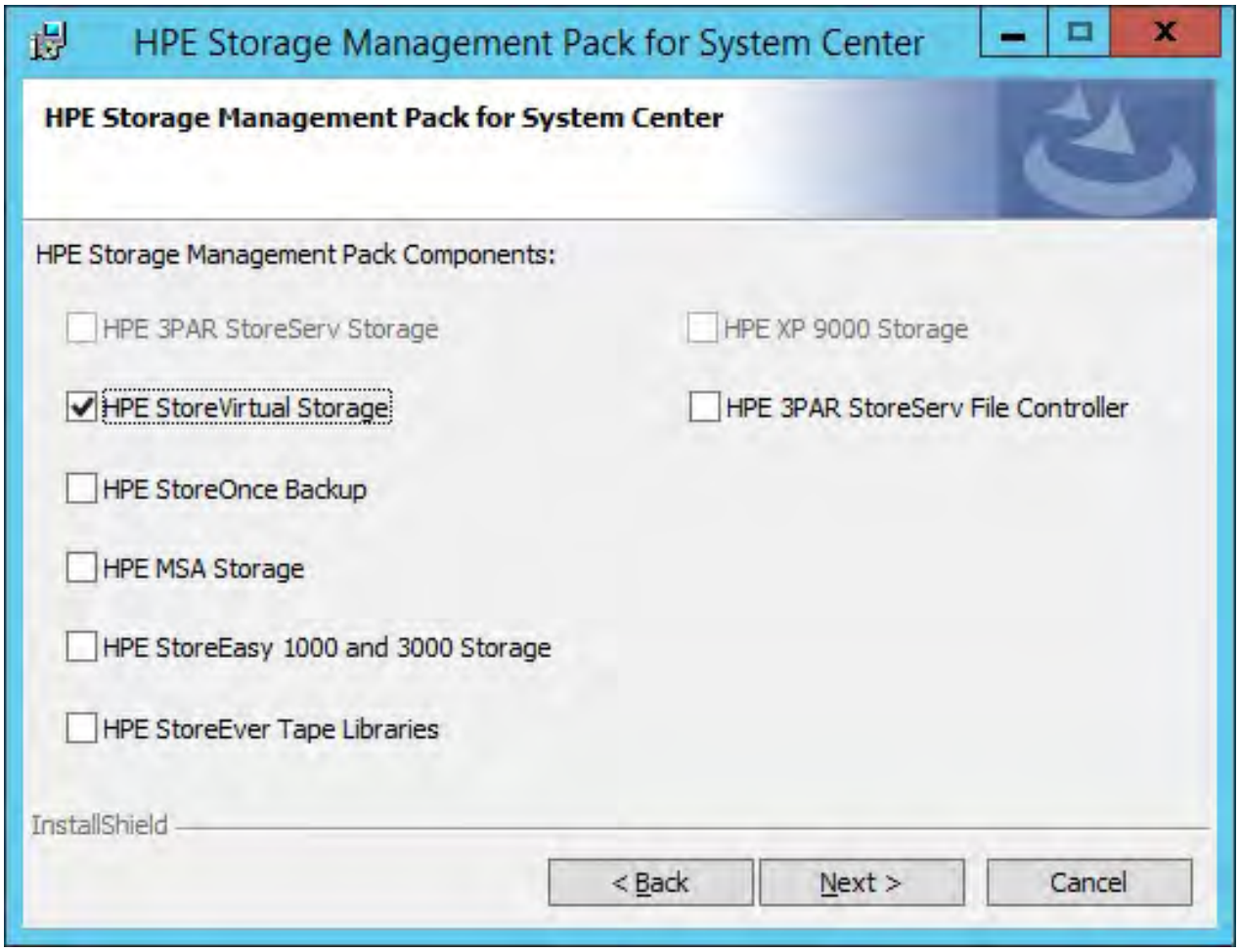
Procedure

1. Run the `HPEStorageManagementPackforSystemCenter.exe` file and click **Next**.

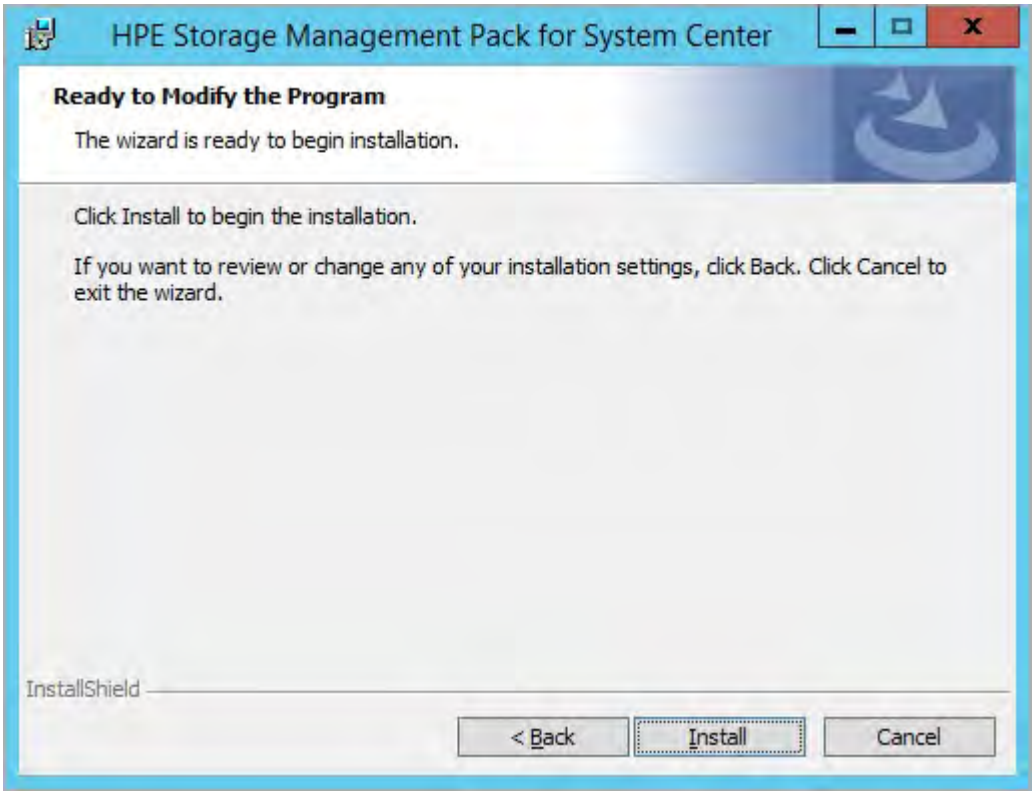


2. Select **Modify** in the **Program Maintenance** window and click **Next**.

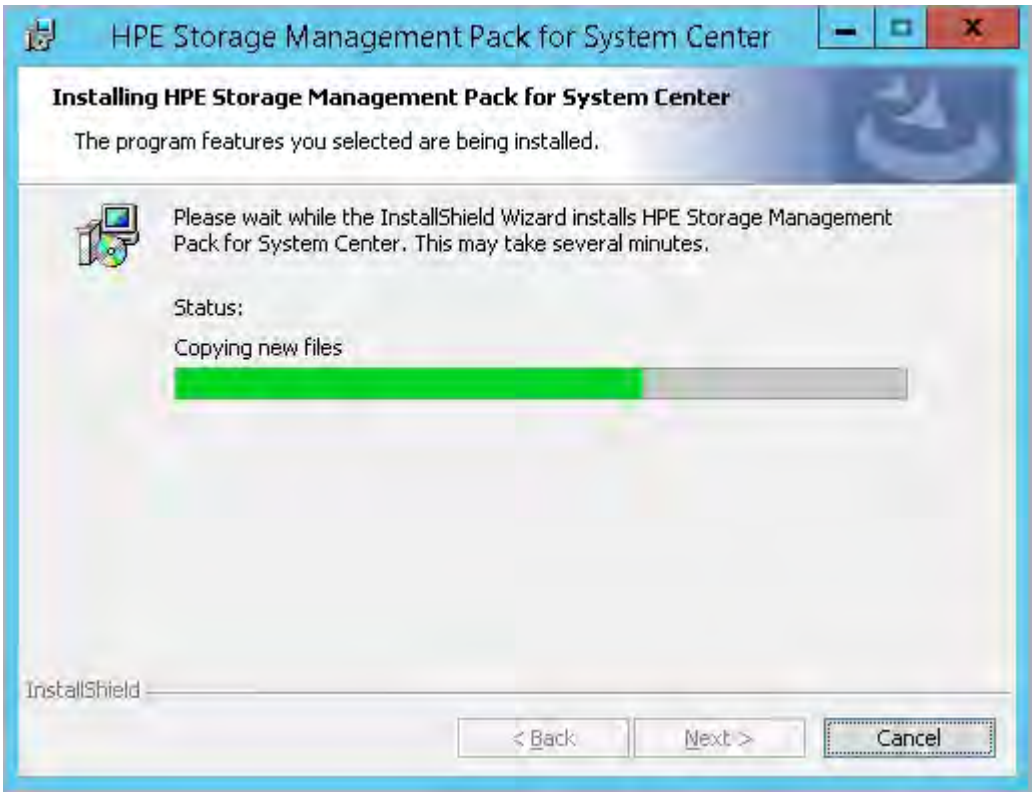
3. Select the check box corresponding to the storage devices that you want to monitor, and click **Next**.



4. Click **Install**.

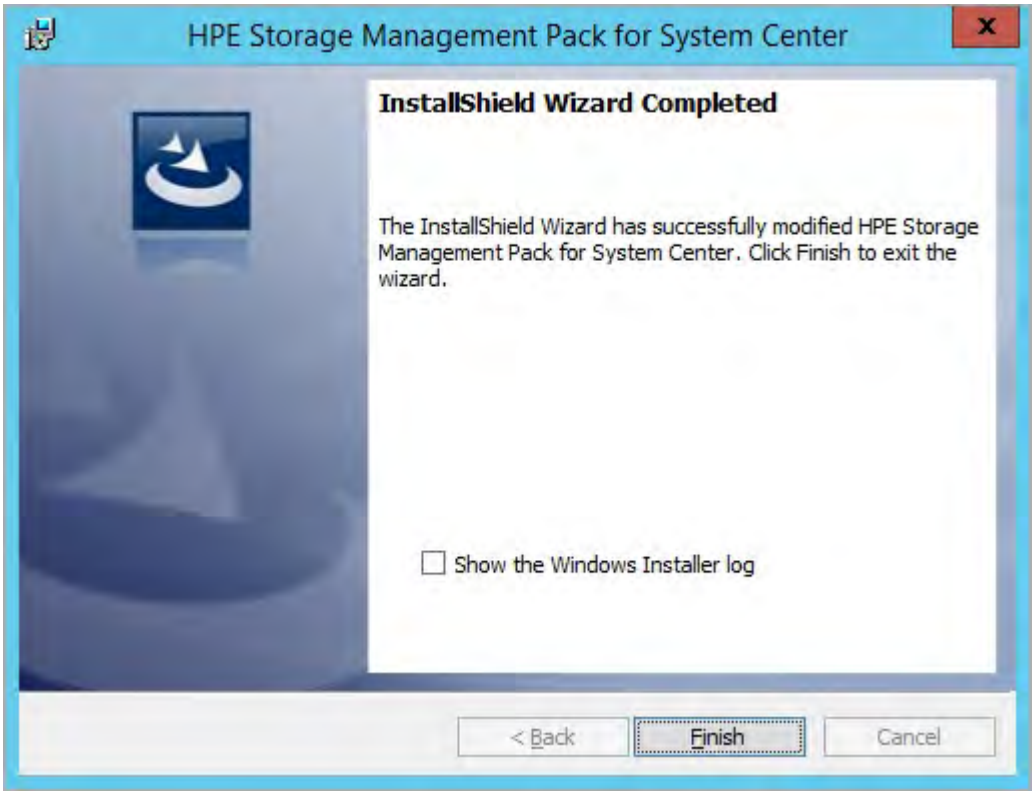


HPE Storage Management Pack for System Center installation progress is displayed.



The installation completion screen is displayed.

5. Click **Finish**.

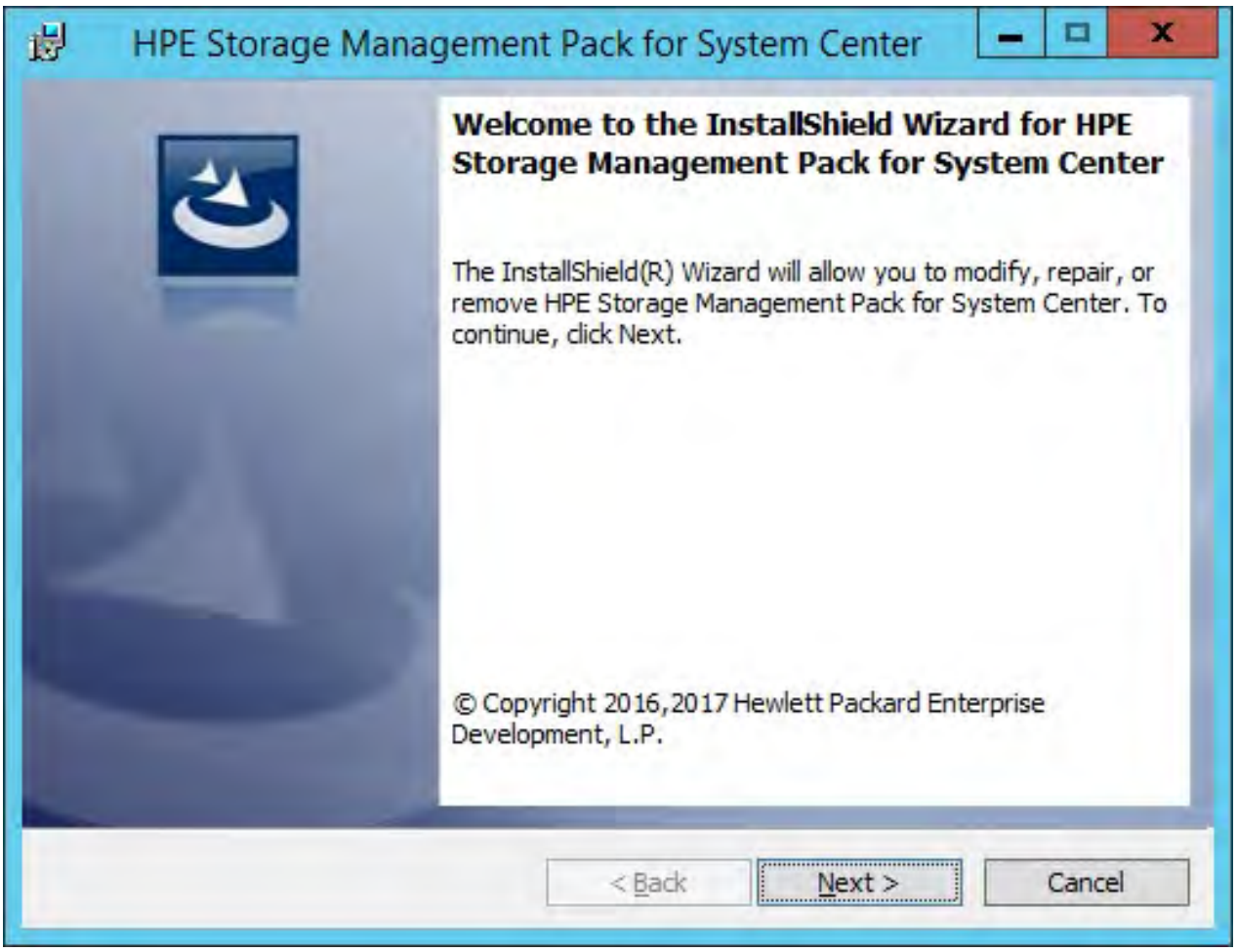


Repairing the HPE Storage Management Pack software

Perform the following steps to repair the management pack software:

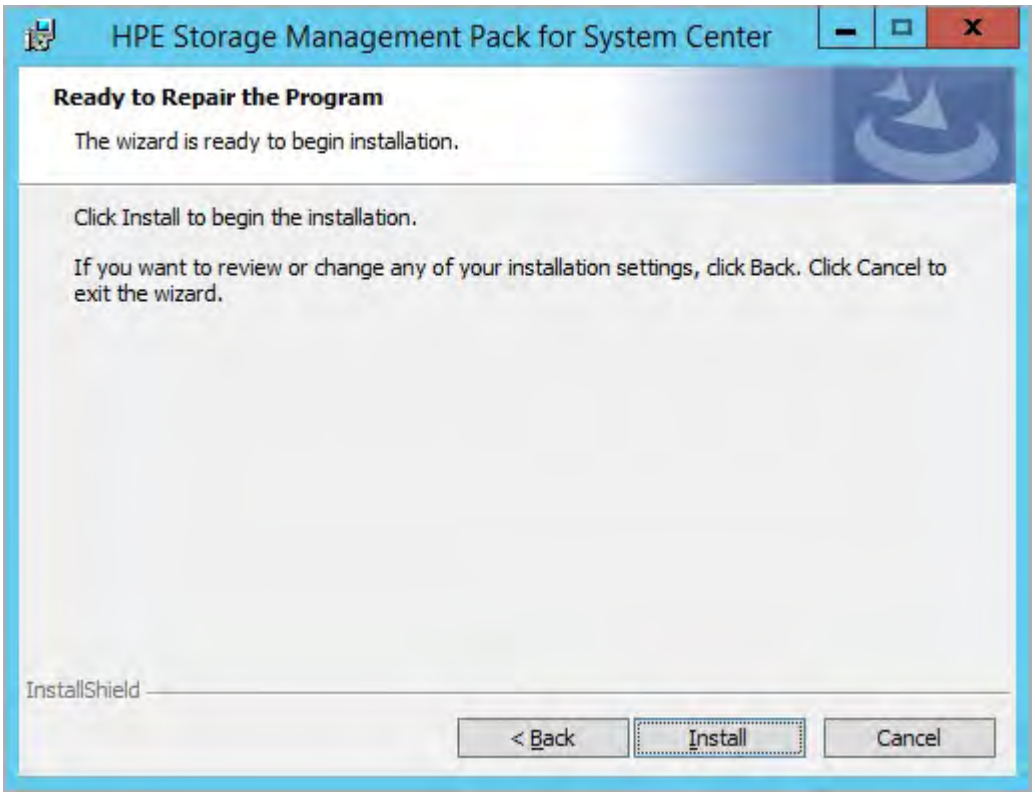
Procedure

1. Run the `HPEStorageManagementPackforSystemCenter.exe` file and click **Next**.

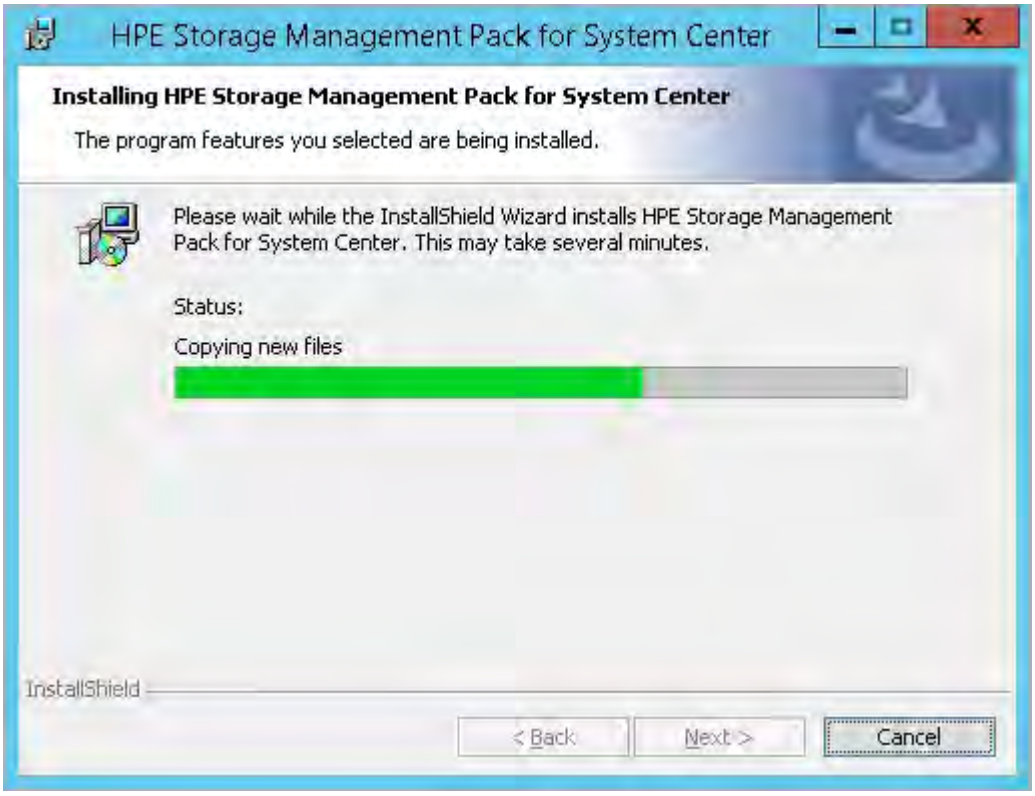


2. Select **Repair** in the **Program Maintenance** window and click **Next**.

3. Click **Install**.

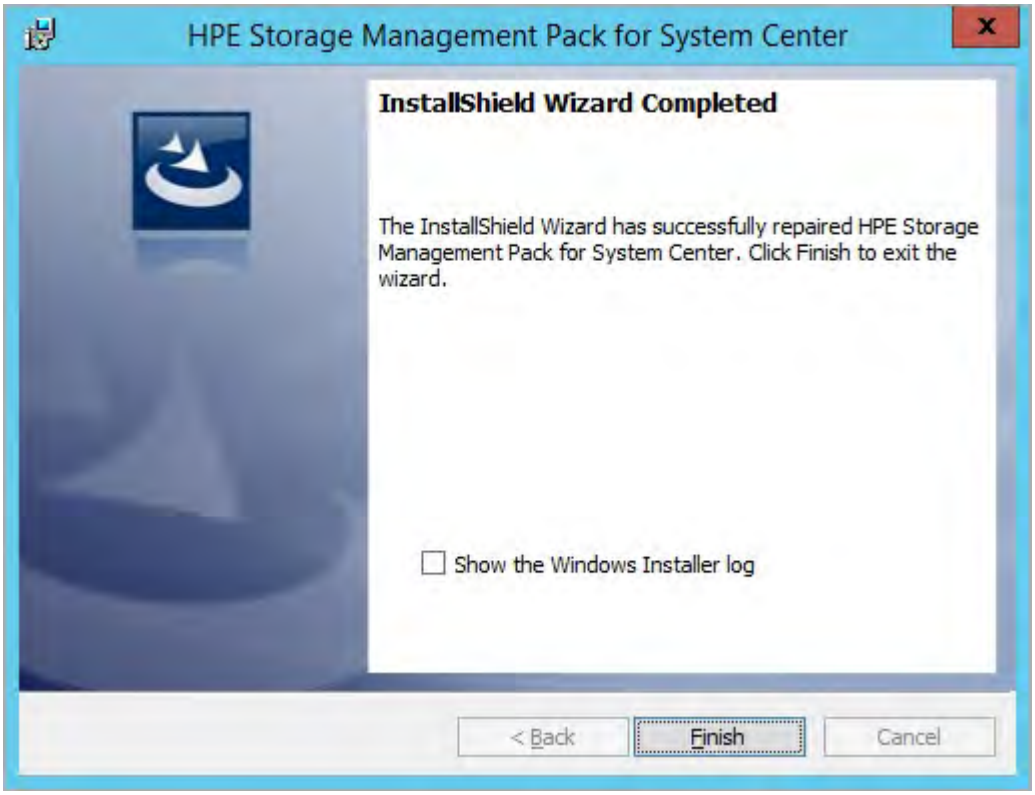


HPE Storage Management Pack for System Center installation progress is displayed.



The installation completion screen is displayed.

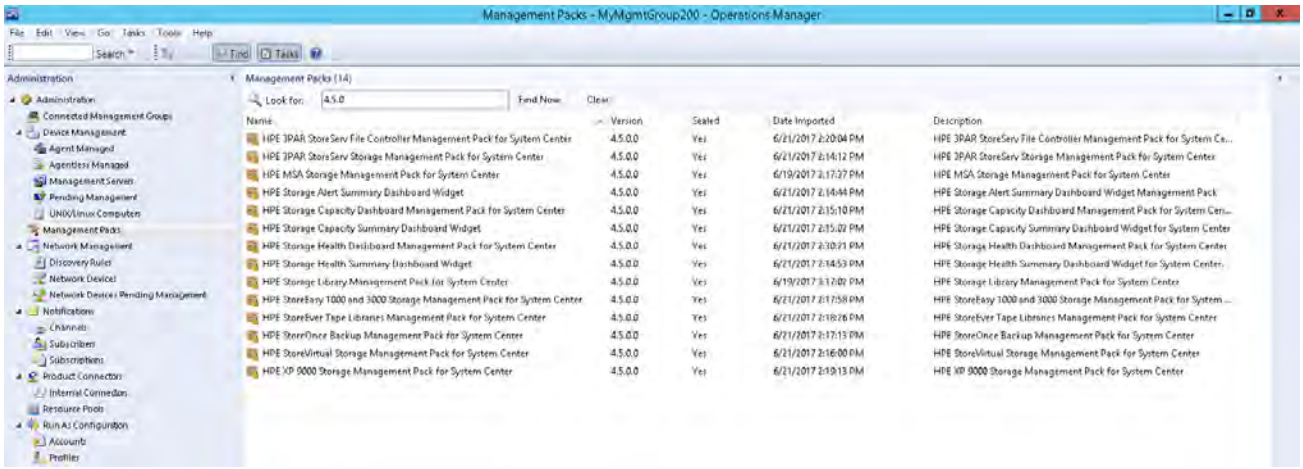
4. Click **Finish**.



Uninstalling HPE Storage Management Pack for System Center

Before uninstallation, from OpsMgr delete:

- Any custom Management Pack dependent on any of the HPE Storage Management Packs
- Dashboard related HPE Storage Management Packs
- Device Specific HPE Storage Management Pack
- HPE Storage Library Management Pack



NOTE:

List of Management Packs displayed in the OpsMgr depends upon the selection of HPE Storage Devices done while installation.

Perform the following steps to uninstall the HPE Storage Management Pack for System Center for Microsoft Windows Server 2012 or later:

1. Navigate to **Start** > **Control Panel** in Microsoft Windows.
2. Double-click **Programs and Features**.
3. Find **HPE Storage Management Pack for System Center**, and click **Uninstall** to remove the software.

NOTE:

To remove the HPE Storage Management Pack for System Center completely from your system, you must manually remove the

`HPE Storage Management Pack for System Center`

folder from the following location:

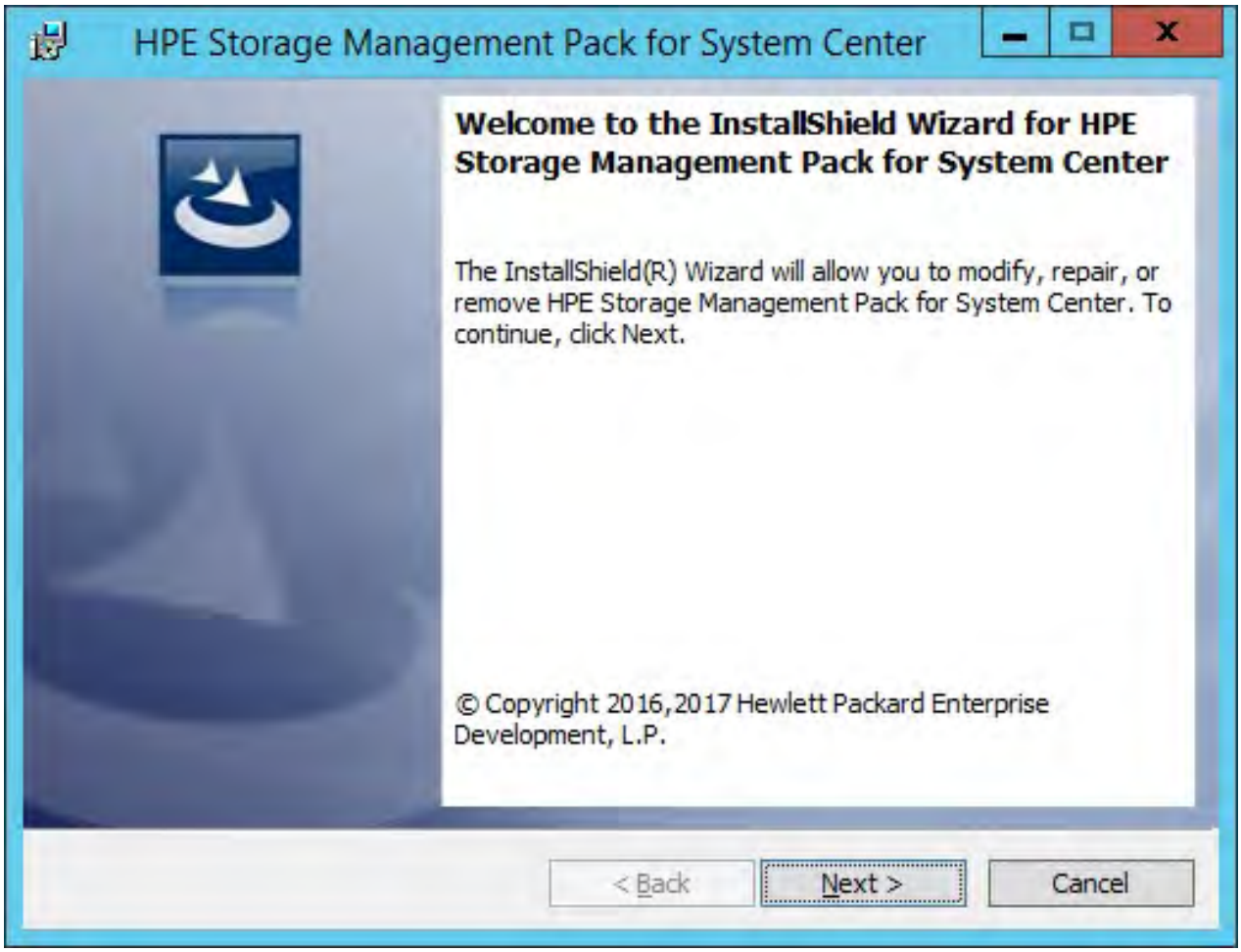
- `~:\Program Files\HPE\HPE Storage Management Pack for System Center`

  for a 32-bit operating system.
- `~:\Program Files(x86)\HPE\HPE Storage Management Pack for System Center`

  for a 64-bit operating system.

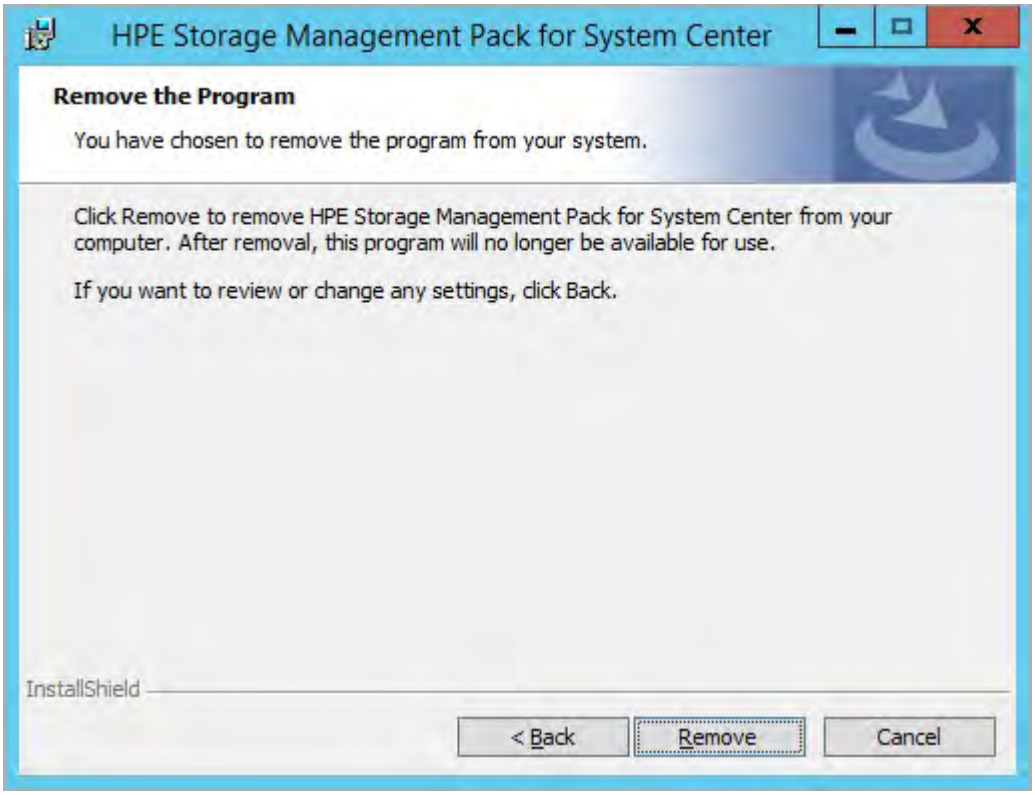
You can also uninstall the HPE Storage Management Pack for System Center by performing the following steps:

1. Run the `HPEStorageManagementPackforSystemCenter.exe` file and click **Next**.



2. Select **Remove** in the **Program Maintenance** window and click **Next**.

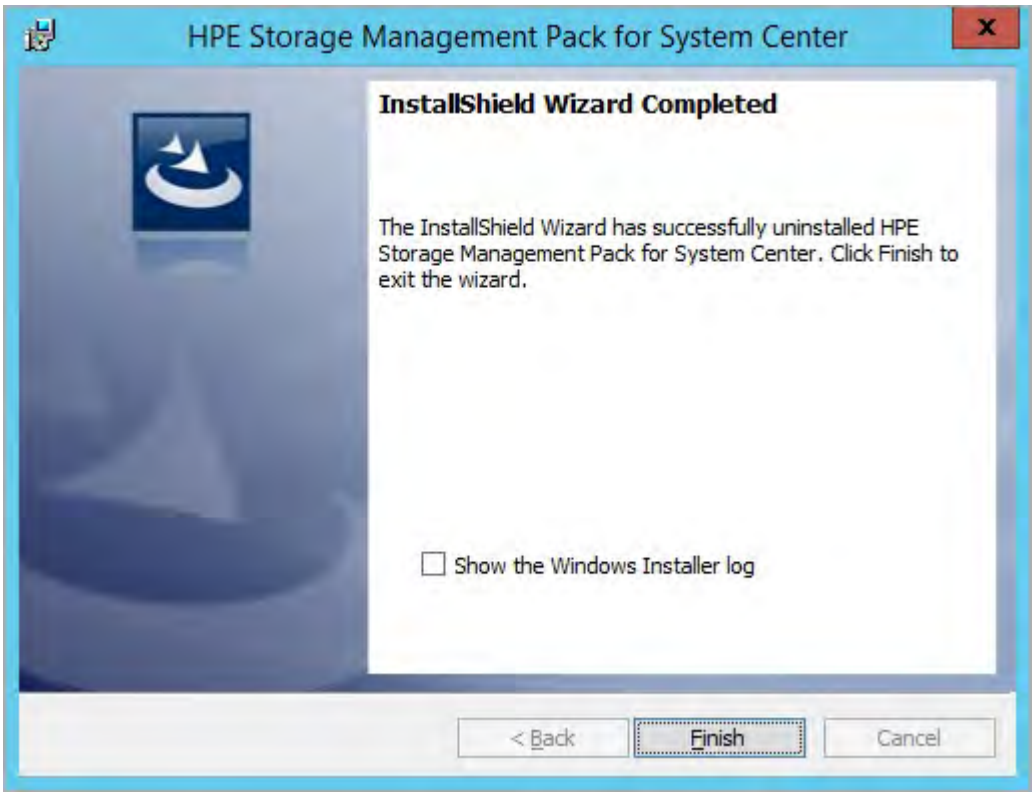
3. Click **Remove**.



HPE Storage Management Pack for System Center uninstallation progress is displayed.

The uninstallation completion screen is displayed.

4. Click **Finish**.



Silently installing HPE Storage Management Pack for System Center

Perform the following steps to silently install the HPE Storage Management Pack software:

Procedure

1. Edit the following fields in the `MPConfig.xml` file:
   - Enter 1 for the `SilentInstall` tag to perform silent installation. Enter 0 for `SilentUnInstall`, `SilentModify`, and `SilentRepair` tags.
   - Enter 0 for the `InstallDirPath` tag to select the default installation path, that is, `C:\Program Files (x86)\HPE\HPE Storage Management Pack for System Center`.However, for Custom Path installation, enter the custom path `(C[AnyDrive]:\Folder Name[Custom Folder]\Folder Name[Custom Folder])` for the `InstallDirPath` tag.
   - Enter 1 for the `OpsMgr` and 0 for the `CollectionPoint` tags to install HPE Storage Management Pack on the management server.Interchange the tag values to install HPE Storage Management Pack on the collection point.
   - Enter 1 for the corresponding `device` tag(s) to import the particular device(s). Enter 0 for the other device tags.For example, enter 1 for `ThreePARStoreServ` to import the 3PAR StoreServ management pack.
2. Save the `MPConfig.xml` file.
3. In the command prompt, navigate to HPEStorageManagementPackSilentInstaller.exe and MPConfig.xml.

   Run the `HPEStorageManagementPackSilentInstaller.exe`.

   The `SilentMPInstall.log` is generated after installation.

Silently modifying HPE Storage Management Pack for System Center

Perform the following steps to silently modify the HPE Storage Management Pack software:

Procedure

1. Edit the following fields in the `MPConfig.xml` file:
   - Enter 1 for the `SilentModify` tag to perform silent modify operation. Enter 0 for `SilentInstall`, `SilentUnInstall`, and `SilentRepair` tags.
   - Do not make any changes to the `InstallDirPath` and `OpsMgr` tags.
   - Enter 1 for the additional `device` tag(s) to import the particular device(s). Enter 0 for the other device tags.For example, enter 1 for `StoreVirtual` and `MSA` to import StoreVirtual and MSA devices in addition to any existing device(s).
2. Save the `MPConfig.xml` file.
3. In the command prompt, navigate to HPEStorageManagementPackSilentInstaller.exe and MPConfig.xml.

   Run the `HPEStorageManagementPackSilentInstaller.exe`.

   The modify operation is complete after the `SilentMPModify.log` file is generated.

Silently repairing HPE Storage Management Pack for System Center

Perform the following steps to silently repair the HPE Storage Management Pack software:

Procedure

1. Edit the following fields in the `MPConfig.xml` file:
   - Enter 1 for the `SilentRepair` tag to perform silent repair operation. Enter 0 for `SilentInstall`, `SilentUnInstall`, and `SilentModify` tags.
   - Do not make any changes to the `InstallDirPath`, `OpsMgr`, and `device` tags.
2. Save the `MPConfig.xml` file.
3. In the command prompt, navigate to HPEStorageManagementPackSilentInstaller.exe and MPConfig.xml.

Run the `HPEStorageManagementPackSilentInstaller.exe`.

The repair operation is complete after the `SilentMPRepair.log` file is generated.

Silently upgrading HPE Storage Management Pack for System Center

Perform the following steps to silently upgrade the HPE Storage Management Pack software:

To upgrade, edit the following fields in the `MPConfig.xml` file:

- Enter 1 for the `SilentInstall` tag to perform silent upgrade operation. Enter 0 for `SilentUnInstall`, `SilentModify`, and `SilentRepair` tags.
- Enter 0 for the `InstallDirPath` tag to select the default installation path as: `C:\Program Files (x86)\HPE\HPE Storage Management Pack for System Center`.However, if the build is installed in the Custom Path, enter the custom path `( C[AnyDrive]:\Folder Name[Custom Folder]\Folder Name[Custom Folder])` for the `InstallDirPath` tag instead of 0.
- Enter 1 for the `OpsMgr` and 0 for the `CollectionPoint` tags to install HPE Storage Management Pack on the management server.
- Enter 0 for the corresponding device tags to upgrade the particular devices to 4.5 version.
- Enter 1 for the corresponding device tags to import the particular devices which were not present earlier, but are newly installed in 4.5 version.

Silently uninstalling HPE Storage Management Pack for System Center

Perform the following steps to silently uninstall the HPE Storage Management Pack software:

Procedure

1. Edit the following fields in the `MPConfig.xml` file:
   - Enter 1 for the `SilentUnInstall` tag to perform silent uninstallation. Enter 0 for `SilentInstall`, `SilentRepair`, and `SilentModify` tags.
   - Do not make any changes to the `InstallDirPath`, `OpsMgr`, and `device` tags.
2. Save the `MPConfig.xml` file.
3. In the command prompt, navigate to HPEStorageManagementPackSilentInstaller.exe and MPConfig.xml.

   Run the `HPEStorageManagementPackSilentInstaller.exe`.

   The `SilentMPUninstall.log` is generated after the uninstallation is complete.

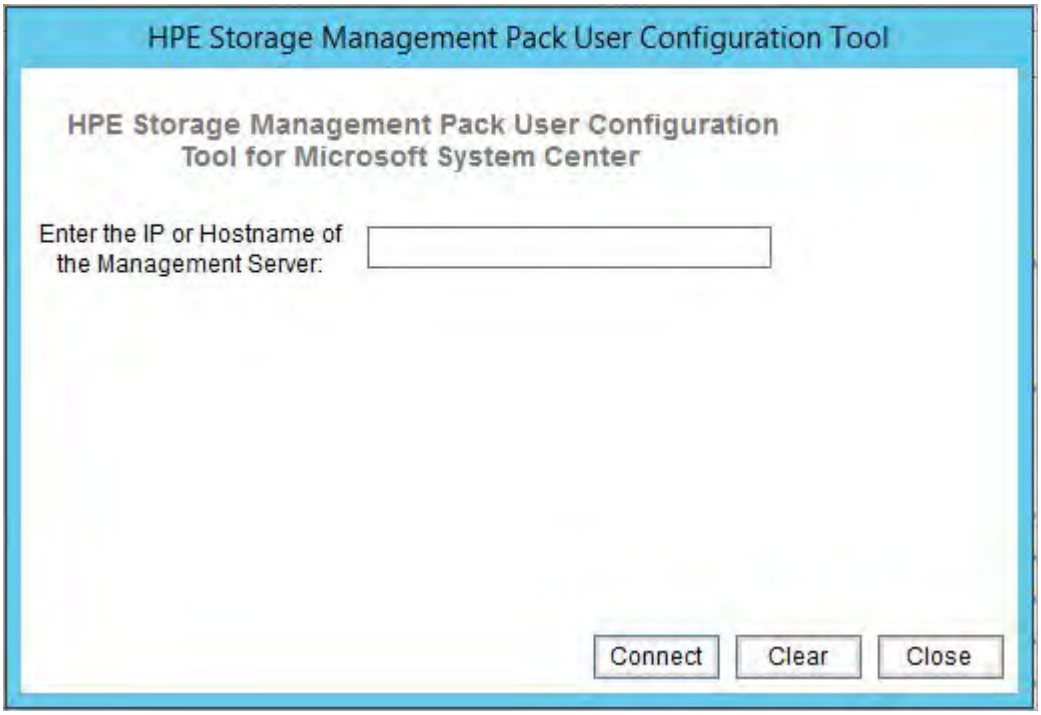
Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool

To monitor HPE Storage devices in the OpsMgr Diagram View, ensure that the Storage device is added in the HPE Storage Management Pack user configuration tool.

Adding HPE Storage devices in the HPE Storage Management Pack User Configuration Tool

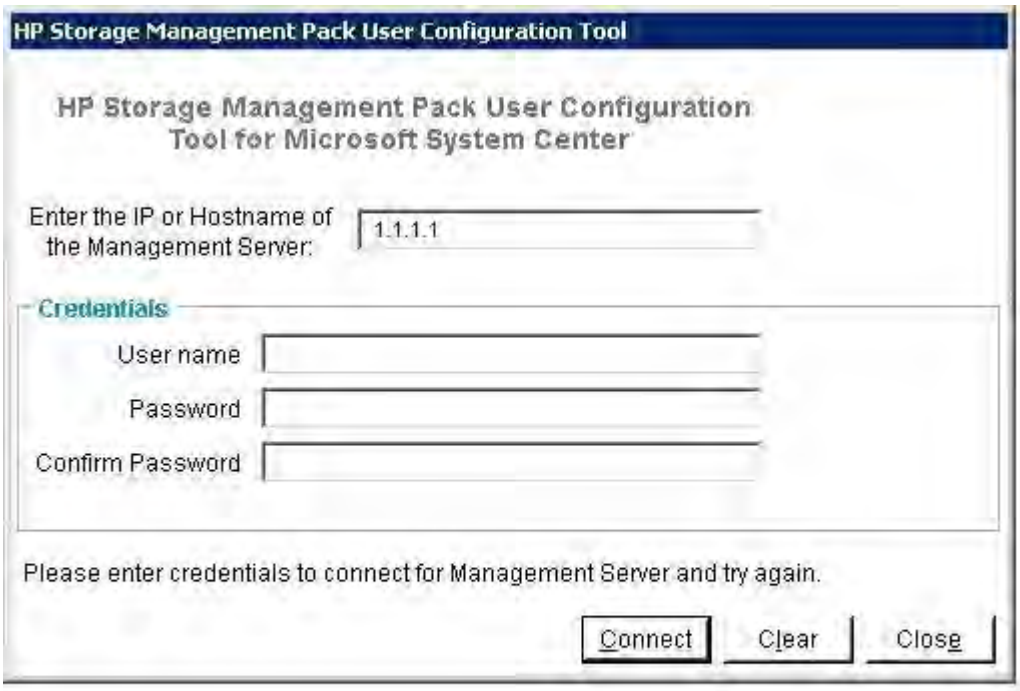
Procedure

1. Launch `HPE Storage Management Pack User Configuration Tool.exe` from the HPE Storage Management Pack for System Center folder created in the start menu. The tool is also present in the install directory path of HPE Storage Management Pack for System Center. A shortcut is also available on the desktop.
2. Enter OpsMgr host name or the IP address and click **Connect**.

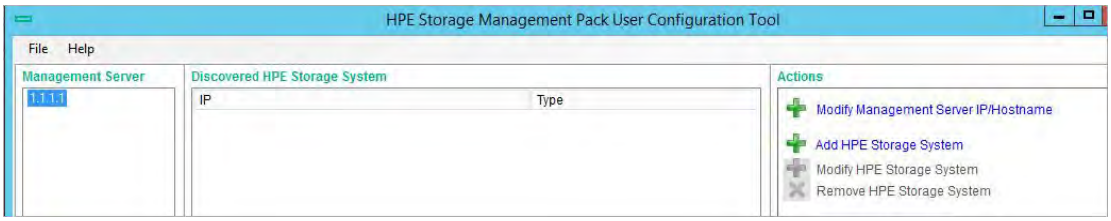


NOTE:

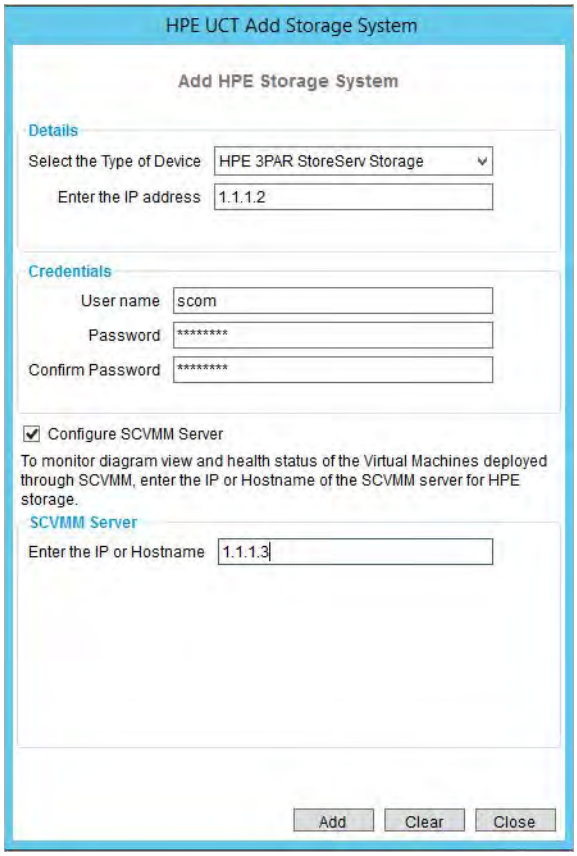
If present server is OpsMgr gateway server or server in other domain, enter OpsMgr domain credentials or the server credentials and click the **Connect** button.



The HPE Storage Management Pack User Configuration Tool main screen is displayed.



3. Click **Add HPE Storage System** in the actions panel of the dashboard to add the HPE Storage devices. Select the type of device from the drop down list, enter IP address and credential details and click **Add**.



NOTE:

If a virtual machine managed in System Center Virtual Machine Manager is created using HPE 3PAR StoreServ or HPE StoreVirtual Storage, then the IP can be configured optionally. This functionality is supported for HPE 3PAR StoreServ and HPE StoreVirtual storage.

If Collection point server is gateway server or server in other domain as OpsMgr you need to enter the domain credentials of the System Center Virtual Machine Manager to connect.

It is recommended to use the superuser account while discovering HPE 3PAR StoreServ Storage, to view all the CPGs, Virtual Volumes, and Virtual Machines in the diagram view.

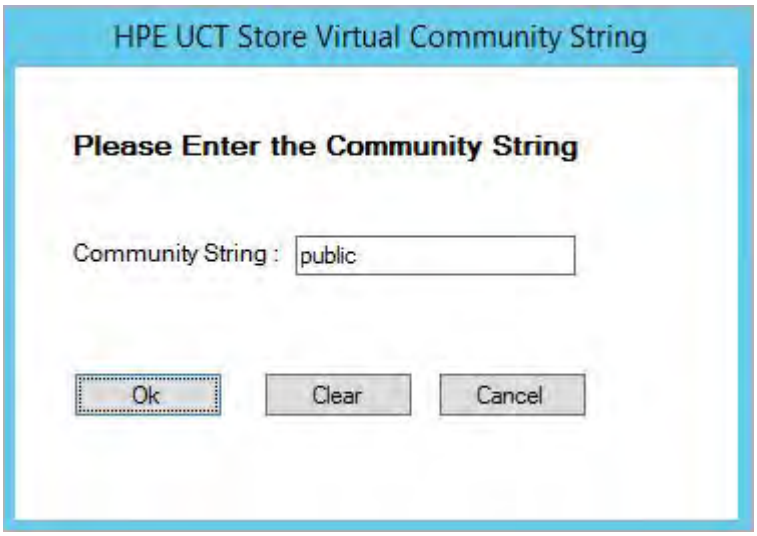
Credentials are not required to discover the HPE 3PAR StoreServ File Controller. However the SMI-S credentials are required for the HPE 3PAR StoreServ Storage and HPE MSA Storage.

For the HPE StoreVirtual Storage devices, cluster credentials are required. For the HPE StoreVirtual 3200 devices or later, one of the controller IPs and the controller credentials are required.

To discover a HPE 3PAR StoreServ Storage successfully, ensure Port 8080 is open on both the OpsMgr as well as the Collection Point Server.

To communicate with HPE 3PAR StoreServ storage for capacity dashboard, `ssh` must be enabled on port 22. If you are a member of the `Administrator` group: To add, modify, or remove HPE storage systems, you must launch the **User Configuration** tool with the `Run as Administrator` option.

A Community String is additionally required to identify the SNMP traps for discovering HPE StoreVirtual Storage devices with LeftHand OS 12.5, 12.6, and 12.7. You can use cluster credentials to add these devices. For the HPE StoreVirtual 3200 (LeftHand OS 13.0 and later) devices, you can use controller credentials. Community string is not required.

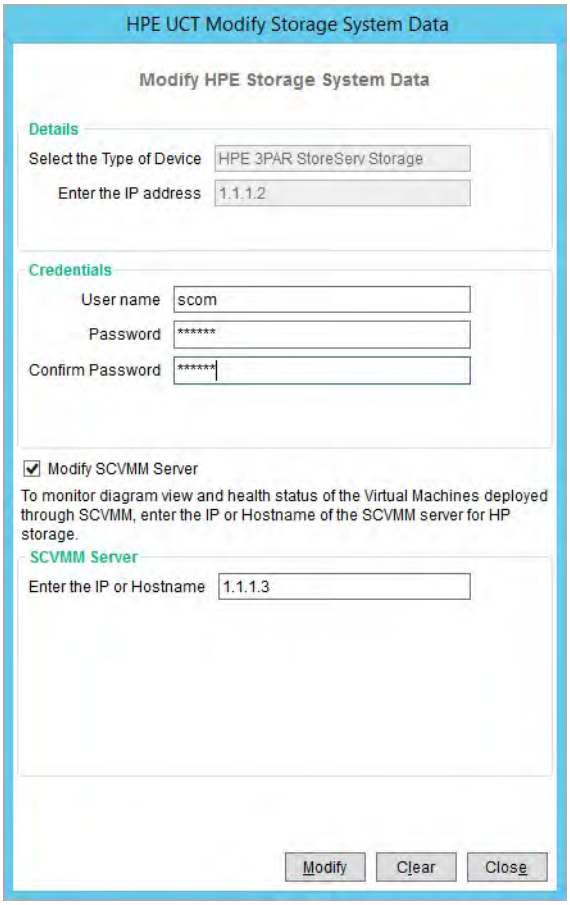


4. After a storage device is successfully added, the storage device is displayed in the **Discovered HPE Storage System** panel.

Modifying credentials of HPE Storage devices in HPE Storage Management Pack user configuration tool

Procedure

1. Select the storage device that needs to be modified and click **Modify HPE Storage System** in the Actions panel.
2. Enter the credentials of the storage device provider and click **Modify**.



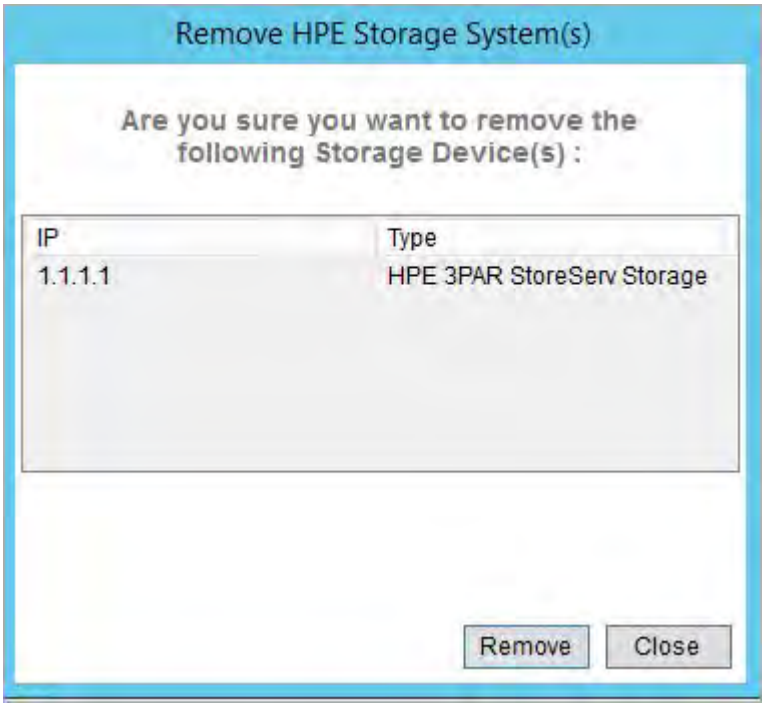
NOTE:

You can also modify the **Community String** for HPE StoreVirtual Storage system. SCVMM Server IP can be modified for HPE 3PAR StoreServ Storage and HPE StoreVirtual Storage devices. To modify SCVMM IP from gateway server or server in other domain, connect using System Center Virtual Machine Manager domain credentials.

Removing discovered HPE Storage device from the HPE Storage Management Pack user configuration tool

Procedure

1. Select the HPE Storage devices that must be removed and click **Remove HPE Storage System** link in the Actions panel.
2. On the **Remove HPE Storage Systems** confirmation screen, click **Remove**.



3. Once a storage system is removed successfully, the corresponding storage entry is removed from the dashboard.

Configuring the Management Pack for HPE 3PAR StoreServ Storage

Processing Events/Alerts for HPE 3PAR StoreServ Storage

NOTE:

- Follow the steps mentioned in **Getting SNMP Traps from HPE 3PAR StoreServ Storage** on page 74 to register the OpsMgr to the SNMP agent of the HPE 3PAR StoreServ Storage.
- In addition to the existing 3PAR Alerts monitoring, the HPE Storage Management Pack for SCOM by default supports monitoring of HPE 3PAR File Persona Alerts. No additional configurations are required to receive 3PAR File Persona Alerts.

Once the HPE 3PAR StoreServ Storage Management Pack is imported into OpsMgr to receive traps from the 3PAR StoreServ device, perform the following steps:

Procedure

1. Launch the **OpsMgr** console.
2. Click the **Authoring** pane to display the Authoring console. In the Authoring console, click **Object Discoveries**.
3. Search for **HPE 3PAR StoreServ SNMP Trap Catcher Rule** using the **Look for:** search bar in the **Object Discoveries** window.
4. Right-click the **HPE 3PAR StoreServ SNMP Trap Catcher Rule** and select **Overrides** > **Override the Object Discovery**. Select the option **For a specific object of the class: Windows Computer**.
5. Override the rule for a particular OpsMgr Server Computer Object (a list that includes all OpsMgr servers as members). The rule is activated at the OpsMgr server and SNMP traps are received.
6. Select the override property after selecting the object, and change the override setting from **False** to **True**. Click **OK** to save. You can save it either in Custom Management Pack or in Default Management Pack.

NOTE:

It is recommended to save the override settings to a custom Management Pack instead of the Default Management Pack.

Follow the steps to save the override setting in custom Management Pack:

- Click **New** in the Override Properties dialog.
- Enter the name of custom management pack in the text-box, click **Next** and select **Create**.

This will avoid creating dependency between Default Management Pack and HPE 3PAR StoreServ Management Pack for System Center.

7. Click **Monitoring** pane to display the Events and Alerts.
8. Click **Events** in the **HPE 3PAR StoreServ Storage** folder. The Events and Alerts of the HPE 3PAR StoreServ are displayed.

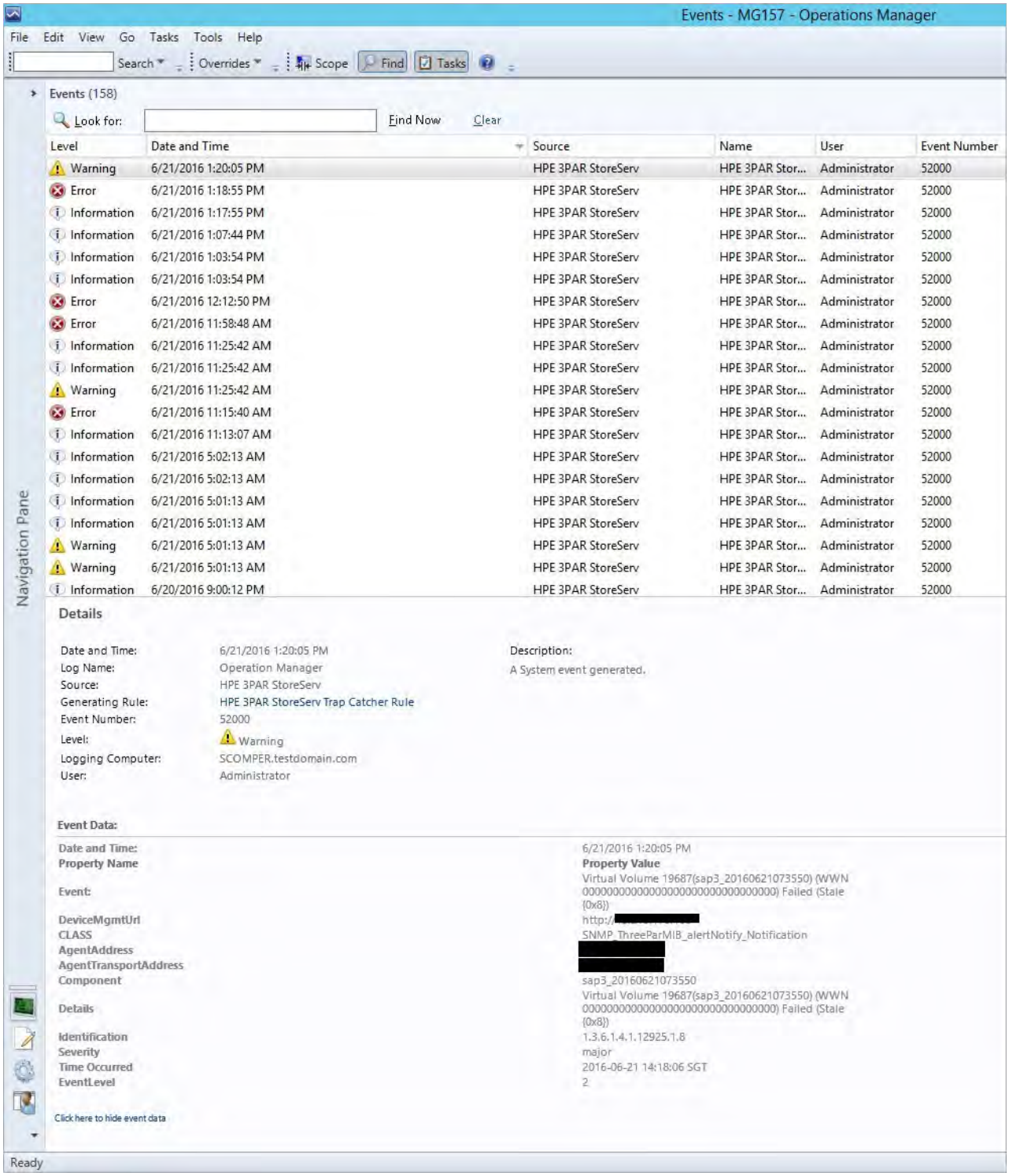


Diagram View of the HPE 3PAR StoreServ Storage

Diagram View displays the diagrammatic representation of the HPE 3PAR StoreServ Storage. It displays the information in a four level hierarchy as follows:

Procedure

1. The first level displays the HPE 3PAR StoreServ Storage group. All the HPE 3PAR Storage discovered will be displayed under this group.
2. The second level displays the HPE 3PAR StoreServ Storage with name and description.
3. The third level displays the groups for component type of HPE 3PAR StoreServ Storage. The component types are grouped as Provisioning, Systems, and Virtualization.
4. The fourth level displays the component group for Provisioning System and Virtualization component types.

Component Type	Component/Component Group Name
Provisioning	CPGs, FPGs
Systems	Batteries, Controller Nodes, Drive Cages, Physical Disks, Ports, Power Supplies, Fans
Virtualization	Virtual Machines

NOTE:

- HPE 3PAR StoreServ 20000 series is partially supported. A few components such as: Drive Cages and Fans may not be discovered. The health state of the Drive Cage Component may be inconsistent. In the **Detail View** section, the Drive Cage Component properties may be blank.
- Some of the HPE 3PAR StoreServ Storage Systems does not have System Fans. For those systems System Fans component will not be shown.
- To avoid clutter in the diagram view, warning or critical state objects are displayed for **Physical Disks**, **Virtual Volumes**, and **Virtual Machines**. To verify the total number of objects, select the component group and check details.
- To view **Virtual Machines** information in the **Diagram View**, perform the following steps:
  - Install System Center Virtual Machine Manager Console 2012 R2 on the computer where System Center Operations Manager 2012 R2 management server is installed. After installation, open the Virtual Machine Manager Console and connect to the respective SCVMM server.
  - Configure HPE 3PAR StoreServ Storage and SCVMM Server IP in User Configuration tool, see **Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool**. For more information, see **Installation prerequisite**.
- In the Diagram View, Hyper-V and ESX Virtual machines and their health status are displayed based on the following conditions:
  - If they are managed by SCVMM
  - If they are created from HPE 3PAR StoreServ Storage
  - If HPE 3PAR StoreServ Storage is monitored by SCOM
- To show the VMs created from HPE 3PAR StoreServ Storage, the VM needs to be managed by the SCVMM that is in same domain as the SCOM server.

5. The fifth level displays the respective instances of each component.
6. Under each CPG, the sixth level displays Clones, Remote Copies, Snapshots, and Volumes as groups. These groups are further classified only if there are unhealthy components in these groups. The total number of the components is listed in each of these groups under the Detail View pane.
7. Under each FPG, the sixth level displays VFS. Similarly, under each VFS, the seventh level displays File Stores. Under each File Store, the next level displays File Shares. Here only unhealthy File Shares are displayed.

Perform the following steps to see the Diagram View of the HPE 3PAR StoreServ Storage:

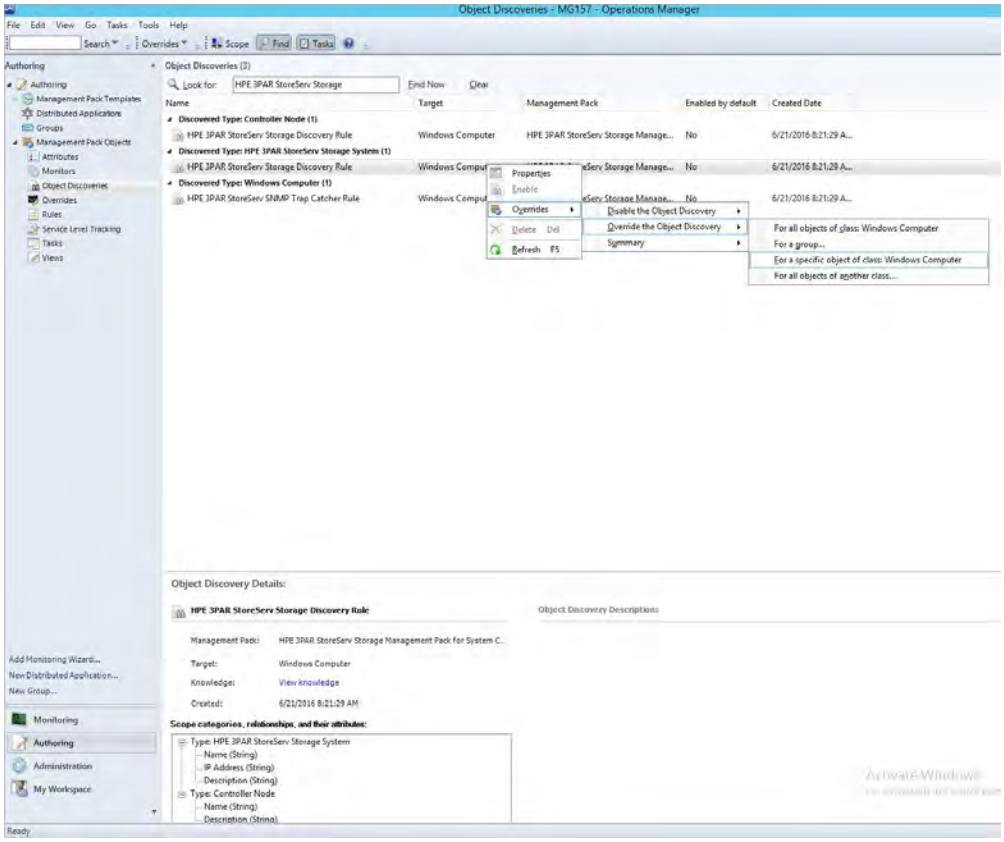
1. Discover the HPE 3PAR StoreServ Storage using the HPE Storage Management Pack User Configuration Tool. For more information, see **Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool** on page 32.

   NOTE:

   If the HPE Storage Management Pack is upgraded, you have to reconfigure the HPE 3PAR Storage system discovered with same credentials, using the HPE Storage Management Pack User Configuration Tool .

2. Click **Authoring pane** after discovering the HPE 3PAR StoreServ Storage. It displays the Authoring console.
3. Select **Object Discoveries** and click **Find**.
4. Type **3PAR StoreServ** in the **Look For:** textbox, and click **Find Now**.
5. The two 3PAR rules are displayed.

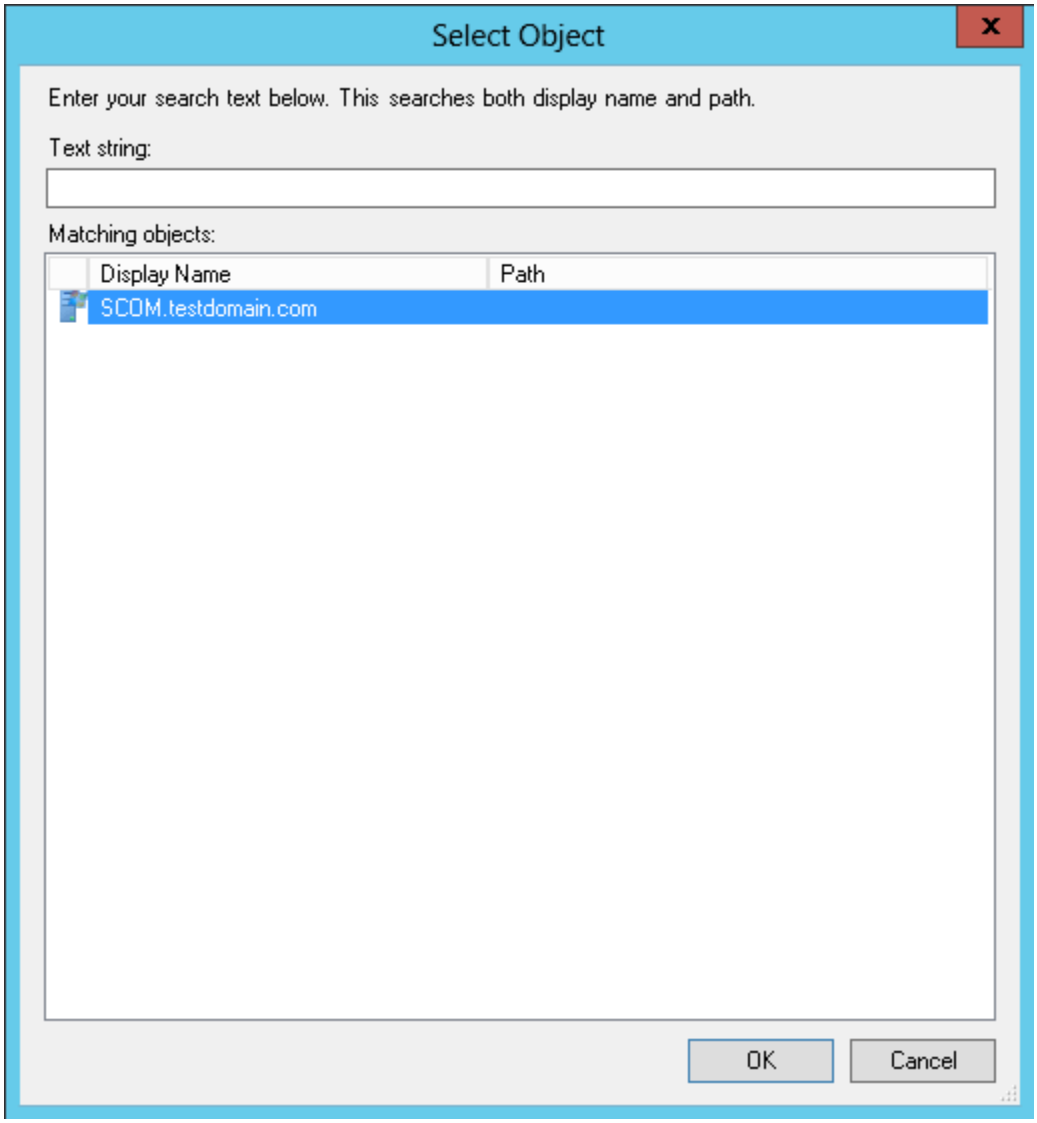
   Right-click on **HPE 3PAR StoreServ Storage Discovery Rule** and select **Override** > **Override the Object Discovery** > **For specific objects of the class: Windows Computer**.



   NOTE:

   Enabling one discovery rule for a device will automatically enable the other discovery rule.

6. Select the object where the HPE 3PAR StoreServ Storage is discovered using HPE Storage Management Pack User Configuration Tool and click **OK**.



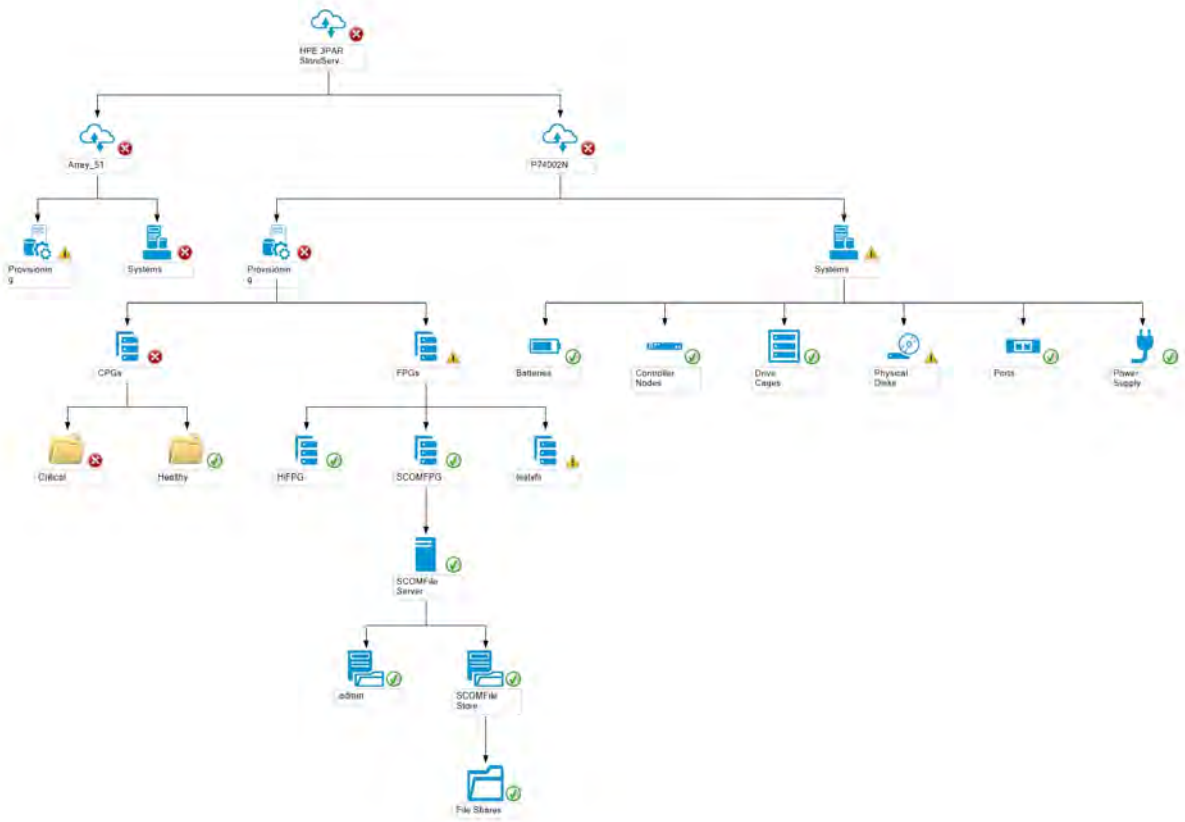
7. Select **Enable** checkbox and set the Override Value to **True**.

   NOTE:

   By default, the Override value is set to 600 seconds, where the rule takes 600 seconds to apply. You can specify a minimum of 150 seconds as the override value.

   For example, if you change the override value to 150 seconds, then the rule will take 150 seconds to apply. In case you change the Override Value, navigate to the last option, select the destination Management Pack on the page and click **New**. Type a name for the management pack and click **Save**.

8. Click **OK**.
9. Click **Monitoring pane** to display the Monitoring console.
10. Click **Diagram View** in the **HPE 3PAR StoreServ Storage** folder. The Diagram view of the HPE 3PAR StoreServ Storage System is displayed.



State View of the HPE 3PAR StoreServ Storage

The state view lists all storage systems with overall health state. The overall health state of Systems, Provisioning, and Virtualization component types is also shown.

Capacity Dashboard for HPE 3PAR StoreServ Storage

The **Capacity Dashboard** displays the capacity details for the following components discovered for HPE 3PAR StoreServ Storage:

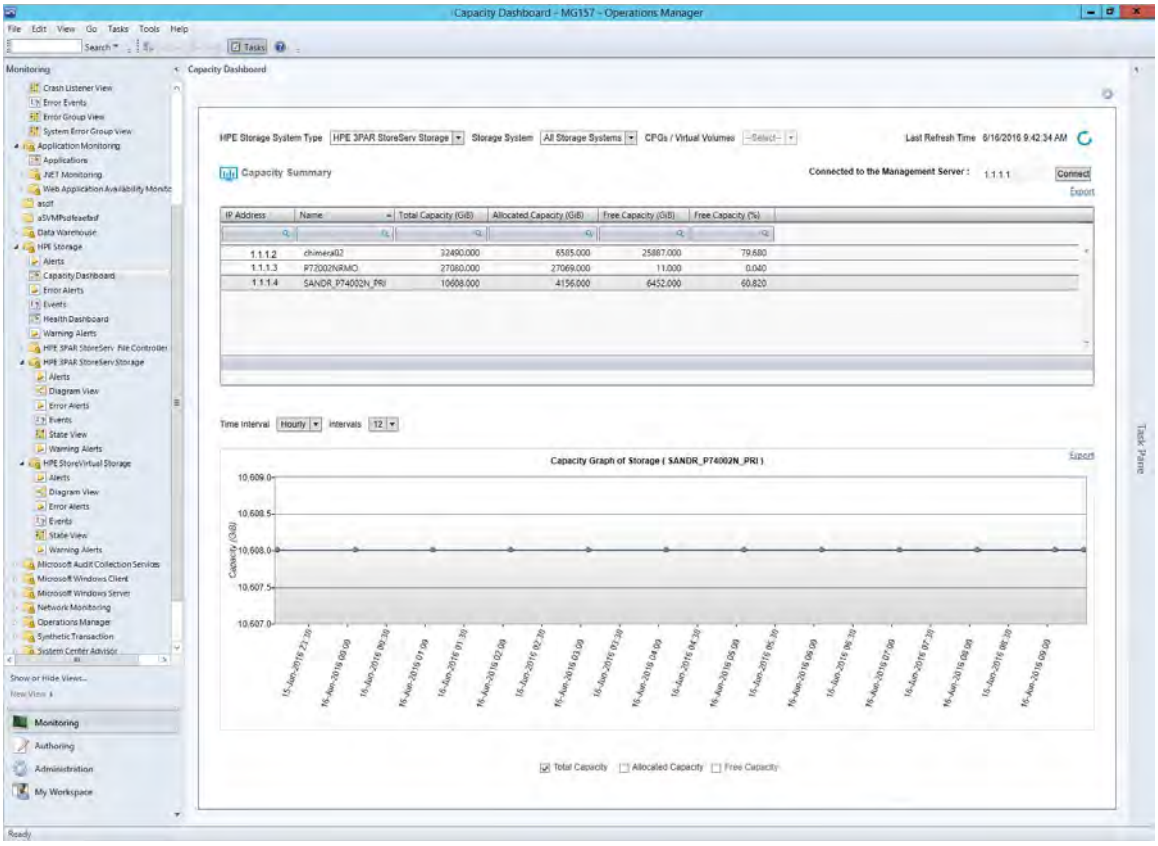
- Storage System
- CPG
- Virtual Volumes

NOTE:

- On the launch of the OpsMgr console on management server, the dashboard will be connected to default Management Server. The user can connect to any other management server by editing the textbox and clicking on the connect button. However when OpsMgr console is launched on any other server other than management server, appropriate message will be prompted to user to enter the Management Server IP or hostname and click on Connect to connect to the appropriate Management Server. Once connected to a management server, the selection will be retained.
- For the Capacity Dashboard functionality to work in a Gateway Setup, the Management Server requires network access to the configured HPE 3PAR systems.

After the installation of HPE 3PAR StoreServ Storage management pack, the **Capacity Dashboard** view is created under the **HPE Storage** folder. To display information in the **Capacity Dashboard**, configure HPE 3PAR StoreServ Storage using the User Configuration Tool.

The capacity dashboard displays data in tabular and graphical format. The current capacity is displayed in the tabular format and the historical capacity is displayed in the graphical format.



Tabular representation of Capacity Summary

The below table lists capacity for Storage Systems, CPGs and Virtual Volumes. Capacity information is displayed in GiB units. The following table provides options to display the capacity details:

Table 3: Capacity Details

Component name	Steps performed	Description	Fields displayed
Storage Systems	1. From the **HPE Storage System Type** list, select **HPE 3PAR StoreServ Storage**. 2. From the **Storage System** list, select **All Storage Systems**.	Displays capacity summary for HPE 3PAR StoreServ Storage configured using User Configuration Tool.	The following information is displayed in the **Capacity Summary** table for Storage Systems: • IP Address • Name • Total Capacity • Allocated Capacity • Free Capacity • Percentage Free Capacity
CPG	1. From the **HPE Storage System Type** list, select **HPE 3PAR StoreServ Storage**. 2. From the **Storage System** list, select one of the storage systems. 3. From the **CPGs / Virtual Volumes** list, select **CPGs**.	Displays capacity summary for the CPGs configured in the selected HPE 3PAR StoreServ Storage.	The following information is displayed in the **Capacity Summary** table for CPGs: • Name • Allocated Capacity • Used Capacity • Free Space
Virtual Volume	1. From the **HPE Storage System Type** list, select **HPE 3PAR StoreServ Storage**. 2. From the **Storage System** list, select one of the storage systems. 3. From the **CPGs / Virtual Volumes** list, select **Virtual Volumes**.	Displays capacity summary for the Virtual Volumes configured in the selected HPE 3PAR StoreServ Storage.	The following information is displayed in the **Capacity Summary** table for Virtual Volumes: • Name • Provisioning • Type • Copy Of • User Space • Admin Space • Copy Space • Total Reserve Space • Virtual Size

You can perform operations, such as search, sort, or filter to find specific components.

To view the latest capacity information, click refresh

Graphical representation of Capacity Summary

The graphical data is the historical data obtained during a specific time period. It displays the change in capacity for a selected time period.

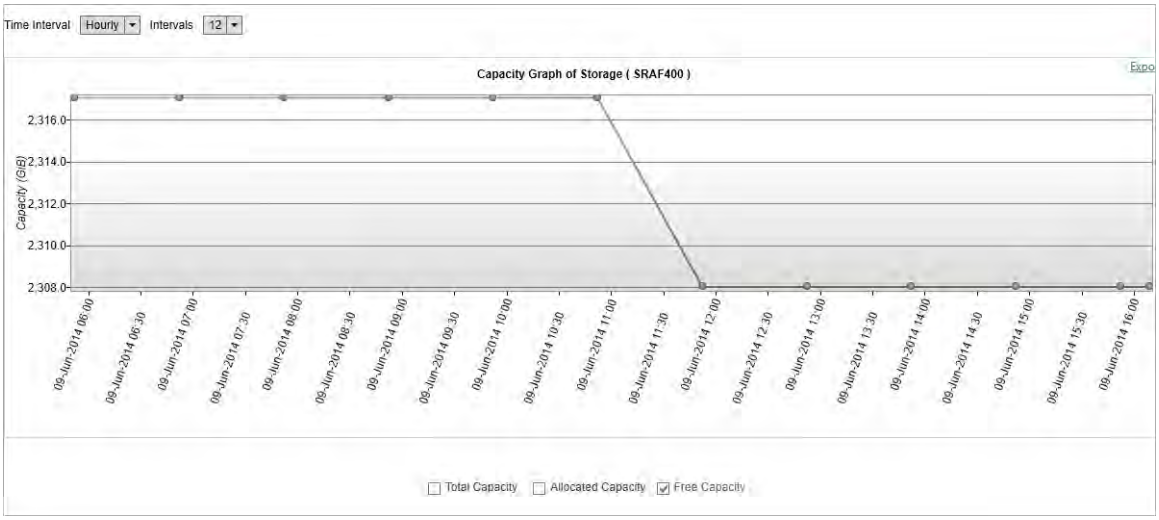
NOTE:

Capacity information for the graph is queried every hour. The graph is displayed three hours after the installation. When a new CPG or Virtual Volume is created, the data is captured from the next poll cycle.

The minimum time interval required to display a graph is an hour and the maximum data that is displayed is 96 months.

To view the graph for a component, select the component in the **Capacity Summary** table, and select the time period from **Time Interval** and **Intervals**.

For example, to display the graph for last **12** hours, select **Time Interval** as **Hourly** and **Interval** as **12**.



NOTE:

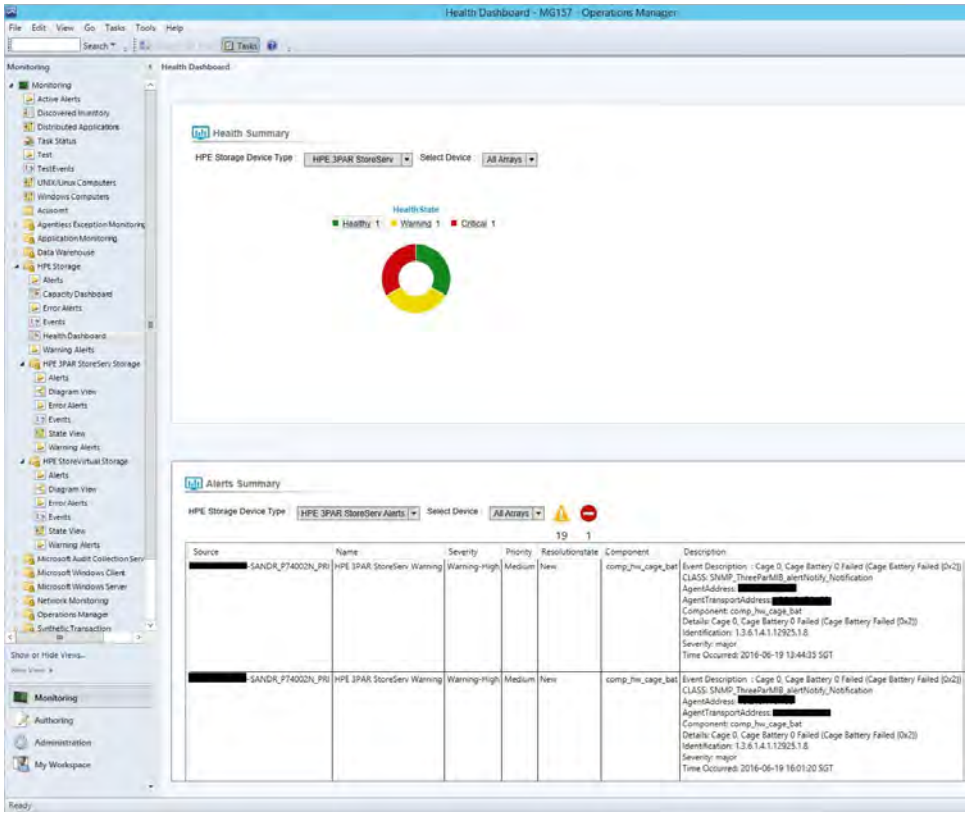
The graph displays the selected attributes based on the component and option selected. You can select multiple or all attributes.

To export the table or graphical data into a `CSV` file format, click **Export**.

Health Dashboard for HPE 3PAR StoreServ Storage

After the installation of HPE 3PAR StoreServ Storage management pack, the Health Dashboard view is created under the HPE Storage folder. The Health Dashboard displays Health Summary and Alert Summary.

The Health Summary displays the health details for components discovered for HPE 3PAR StoreServ Storage configured using the User Configuration Tool. The Alert Summary displays the warning and critical alerts for selected HPE 3PAR StoreServ Storage.



NOTE:

If OpsMgr console is launched on any other server other than OpsMgr management server make sure Management Server IP connected in Capacity dashboard before launching the Health dashboard.

Health Summary

Health summary displays the health state of HPE 3PAR StoreServ Storage and its components. The health state table provides information on the steps you must perform to view the health state of specific components of HPE 3PAR StoreServ discovered perform the following:

Table 4: Health State

Component label	Steps performed	Description
All Storage Systems	1. From the **HPE Storage Device Type** list, select **HPE 3PAR StoreServ**. 2. From the **Select Device** list, select **All Arrays**.	Displays health summary for the HPE 3PAR StoreServ Storage configured using User Configuration Tool. The following image represents the health summary for all arrays.
Systems/Provisioning/ Virtualization Components	1. From the **HPE Storage Device Type** list, select **HPE 3PAR StoreServ**. 2. From the **Select Device** list, select IP of the Storage System.	Displays health summary for the HPE 3PAR StoreServ Storage Systems/Provisioning/ Virtualization Components discovered for the selected storage system.The following image represents the health summary for Systems/ Provisioning/Virtualization Components.

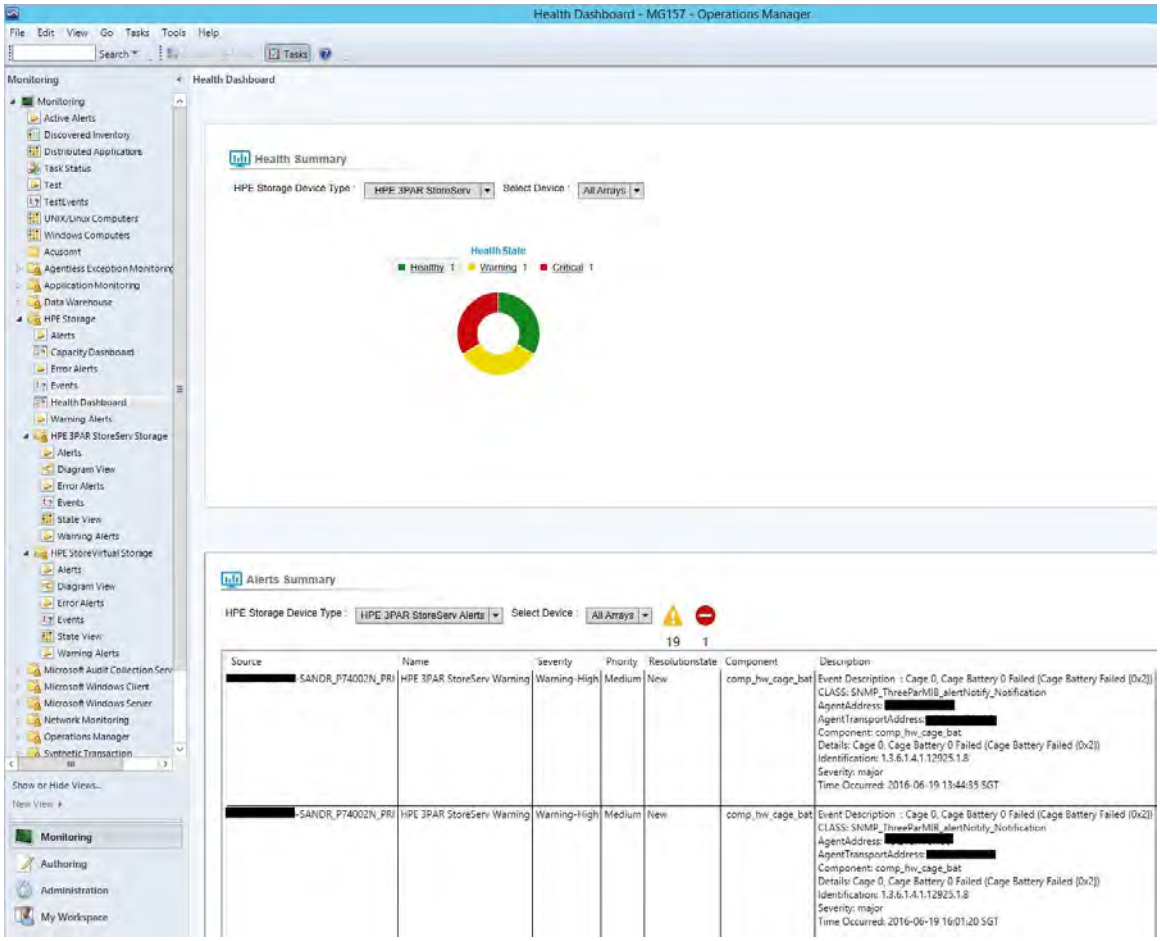
NOTE:

For volume health summary, only volumes that are associated with a CPG are considered. Also, `admin` and `.srdata` volumes are not considered.

Alerts Summary

The **Alerts** summary displays the critical and warning alerts for HPE 3PAR StoreServ Storage. You can also view the count of warning and critical alerts generated by the specific HPE 3PAR StoreServ Storage.

For information on configuring HPE 3PAR StoreServ storage alerts, see **Processing Events/Alerts for HPE 3PAR StoreServ Storage**.



To view the alerts details of the HPE 3PAR StoreServ storage:

1. In **HPE Storage Device Type**, select **HPE 3PAR StoreServ Alerts**.
2. Select **Warning** or **Critical** . The following details are displayed:

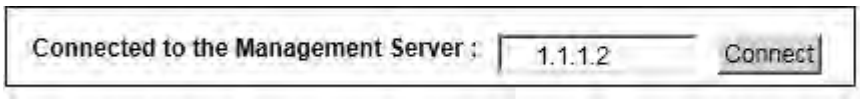
   - Source—Represents IP address and name of the HPE 3PAR StoreServ
   - Name—Represents the rule name of HPE 3PAR StoreServ
   - Severity—Represents the severity of an alert. The mapping of 3PAR and SCOM is displayed in the following table:

3PAR	SCOM
Fatal	Critical—High
Critical	Critical—Medium
Degraded	Critical—Low
Major	Warning—High
Minor	Warning—Low

   - Priority—Represents the priority of the generated alert.
   - Resolutionstate—Represents the resolution state of an alert.
   - Component—Represents the component name.
   - Description—Represents the detail alert description.

Accessing Capacity Dashboard from a remote OpsMgr Console

When OpsMgr console is launched from any server other than the management server, you must enter the Management Server IP or hostname and click on **Connect**. You can connect to another management server by editing the text box and clicking on the connect.



Configuring the Management Pack for HPE StoreVirtual Storage

NOTE:

The health of Virtual group is not rolled up to higher level for HPE StoreVirtual 3200 (LeftHand OS 13.0 and later) devices. For older devices, the health of Virtual group is rolled up.

Processing Events/Alerts for HPE StoreVirtual Storage

NOTE:

Follow the steps mentioned in **Getting SNMP traps from HPE StoreVirtual Storage System** on page 75 to register the OpsMgr to the SNMP agent of the HPE StoreVirtual Storage.

Once the HPE StoreVirtual Storage Management Pack for System Center is imported into OpsMgr to receive traps from the StoreVirtual device, perform the following steps:

Procedure

1. Launch the OpsMgr console.
2. Click the **Authoring** pane to display the Authoring console. In the Authoring console, click **Object Discoveries**.
3. Search for **HPE StoreVirtual Storage SNMP Trap Catcher Rule** using the **Look for:** search bar in the **Object Discoveries** window.
4. Right-click the **HPE StoreVirtual Storage SNMP Trap Catcher Rule** and select **Overrides** > **Override the Object Discovery**. Select the option **For a specific object of the class: Windows Computer**.
5. Override the rule for a particular OpsMgr Server Computer Object (list that includes all OpsMgr servers as members). The rule is activated at the OpsMgr server and SNMP traps are received.
6. Select the override property after selecting the object, and change the override setting from **False** to **True**. Click **Ok** to save it to the Default Management Pack.
7. Click **Monitoring** pane to display the Events and Alerts.
8. Click **Events** in the **HPE StoreVirtual Storage** folder. The Events and Alerts of the HPE StoreVirtual is displayed.

NOTE:

It is recommended to save the override settings to a custom Management Pack instead of the Default Management Pack. Follow the steps to save the override setting in custom Management Pack:

1. Click **New** in the **Override Properties** dialog box.
2. Enter the name of custom management pack in the text-box, click **Next** and select **Create**. This will avoid creating dependency between Default Management Pack and HPE StoreVirtual Storage Management Pack.

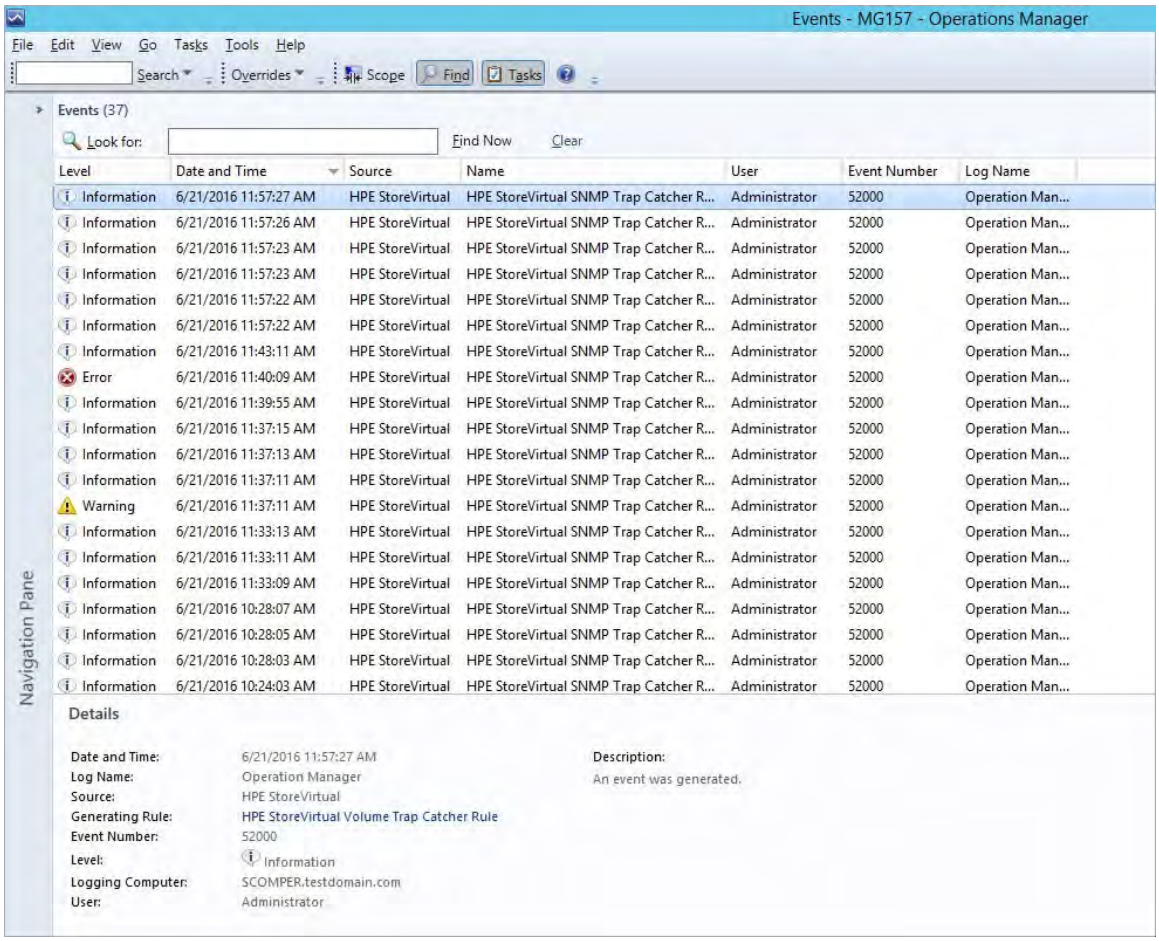


Diagram View of the HPE StoreVirtual Storage

Diagram View displays the diagrammatic representation of the HPE StoreVirtual Storage. It displays the information in a six level hierarchy as follows:

Procedure

1. The first level displays the HPE StoreVirtual Storage group.
2. The second level displays the Management Group of HPE StoreVirtual Storage. All HPE StoreVirtual Storage managed by the HPE Storage Management Pack User Configuration Tool are displayed.
3. The third level displays the clusters of HPE StoreVirtual Storage LeftHandOS 12.5, 12.6, 12.7 and storage systems of HPE StoreVirtual storage LeftHandOS 13.0, 13.1 and 13.5 devices.
4. The fourth level displays the Physical, Logical and Virtual groups to display all the components of HPE StoreVirtual Storage.

   The following HPE StoreVirtual components are monitored:

Component Type	Component Group
Physical	Drives, Fans, Network Device, Power Supply, Controller Cache and Cache Battery Backup Unit, Enclosures (for HPE StoreVirtual 3200)
Logical	Volumes and Snapshots under each volume
Virtual	HPE StoreVirtual VSA and its sub components, Virtual Machines that are created from HPE StoreVirtual Storage managed by SCVMM

NOTE:

Make sure manager state of all HPE StoreVirtual Appliance and VSA belonging to cluster are in running.

To show the VMs created from HPE StoreVirtual Storage, the VM needs to be managed by the SCVMM that is in same domain as the SCOM server.

Perform the following steps to see the Diagram View of the HPE StoreVirtual Storage:

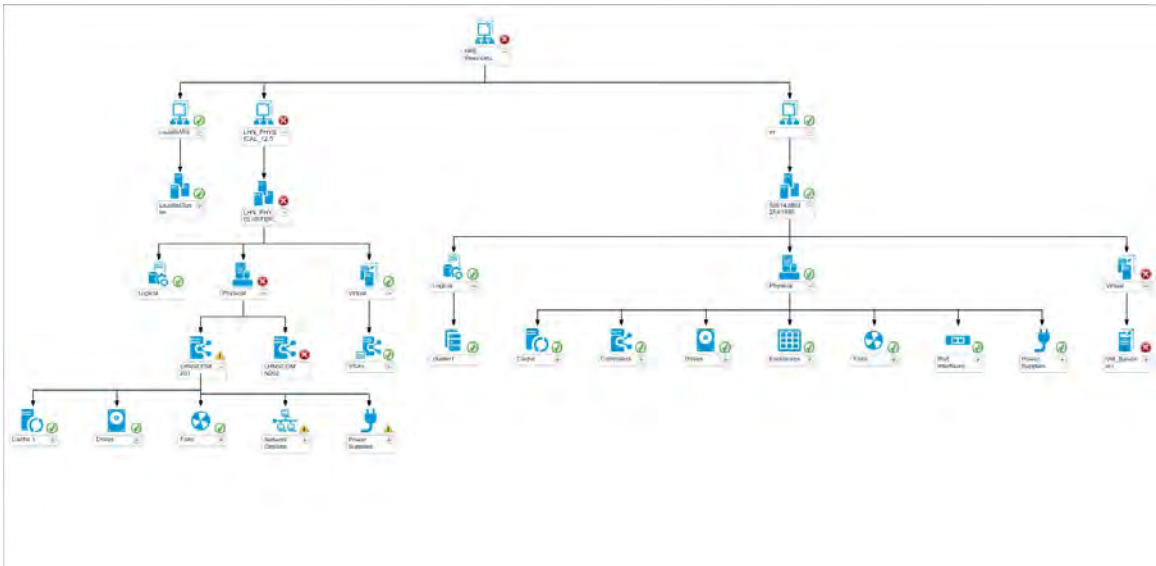
1. Discover the HPE StoreVirtual Storage using the HPE Storage Management Pack User Configuration tool. For more information, see **Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool** on page 32.
2. Click **Authoring** pane after you discover the StoreVirtual Storage. It displays the Authoring console.
3. Select **Object Discoveries**.
4. To discover the HPE StoreVirtual Storage System, do one of the following:
   - Search for **HPE StoreVirtual Storage Discovery Rule** using the **Look for:** search bar in the **Object Discoveries** window.
   - Right-click the **HPE StoreVirtual Storage Discovery Rule** and select **Override** > **Override the Object Discovery**.
   - Select **Overrides** > **Override the Object Discovery** > **For a specific object of class: Windows Computer** .
   - Select the object where the StoreVirtual Storage is discovered using HPE Storage Management Pack User Configuration Tool and click **OK**.
   - Select **Enable checkbox** and set the Override Value to **True**.
   - Change the interval seconds of the rule appropriately.
   - Click **OK**.

NOTE:

By default, the Override value is set to 1800 seconds, where the rule takes 1800 seconds to apply. You can specify a minimum of 300 seconds as the override value.

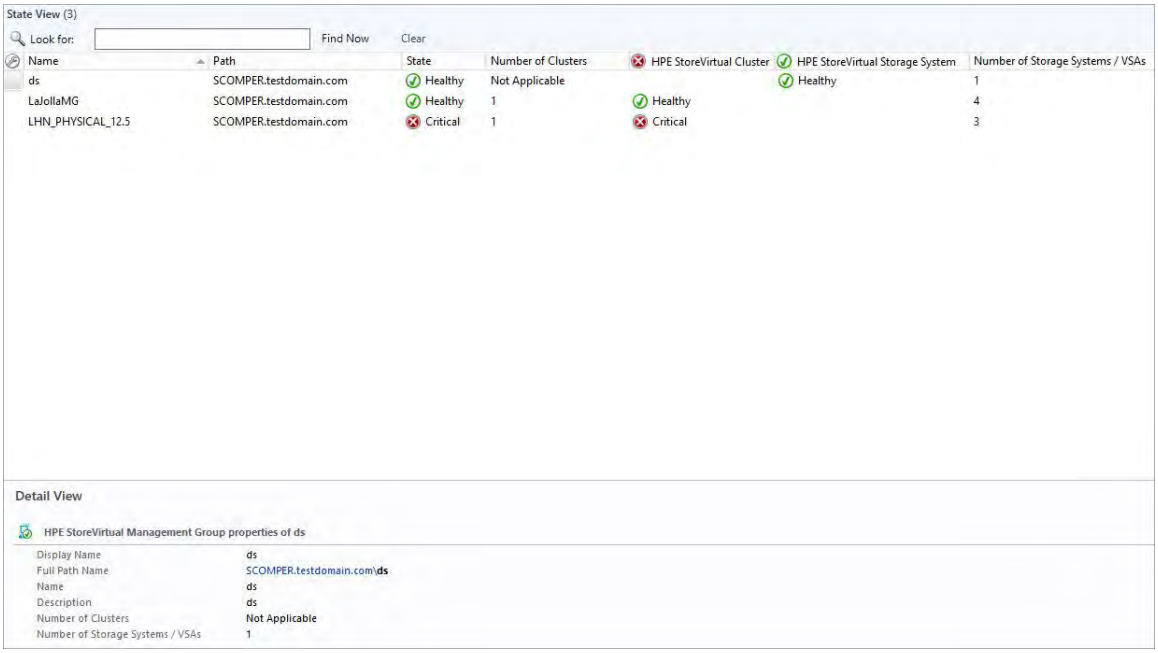
For example, if you change the override value to 300 seconds, then the rule will take 300 seconds to apply. In case you change the Override Value, navigate to the last option, select the destination Management Pack on the page and click **New**. Type a name for the management pack and click **Save**.

5. Click **Monitoring** pane to display the Monitoring console.
6. Click **Diagram View** in the **HPE StoreVirtual Storage** folder. The Diagram View of the HPE StoreVirtual Storage with the health state is displayed.



State view of the HPE StoreVirtual Storage

The state view shows all the management groups discovered, along with their overall health state. For each HPE StoreVirtual device, the overall health state of Physical components, Logical components, and Virtual components is also shown.



Configuring the Management Pack for HPE 3PAR StoreServ File Controller

Processing Events/Alerts for HPE 3PAR StoreServ File Controller

NOTE:

Follow the steps mentioned in **Discovery of HPE 3PAR StoreServ File Controller** to configure HPE 3PAR StoreServ File Controller to receive the events in OpsMgr.

After installation of HPE 3PAR StoreServ File Controller Management Pack, to receive WMI events from the 3PAR StoreServ file controller system, perform the following steps:

1. Launch the OpsMgr console.
2. Click the **Authoring** pane to display the Authoring console. In the Authoring console, click **Object Discoveries**.
3. Search for **HPE 3PAR StoreServ File Controller Event Discovery Rule** using the **Look for:** search bar in the **Rules** window.
4. Right-click the **HPE 3PAR StoreServ File Controller Event Discovery Rule** and select **Overrides** > **Override the Rule**.
5. Select For a specific object of the class: Windows Computer.
6. Override the rule for a particular HPE 3PAR StoreServ File Controller system. The rule is activated at the OpsMgr server, and WMI events are received.
7. Select the override property after selecting the HPE 3PAR StoreServ File Controller system, and change the override setting from **False** to **True**. Click **Ok** to save it to the Default Management Pack.

NOTE:

It is recommended to save the override settings to the Custom Management Pack instead of the Default Management Pack.

Follow the steps to save the override setting in the Custom Management Pack:

- Click **New** in the Override Properties dialog box.
- Enter the name of custom management pack in the text-box, click Next and select Create.
- This avoids the need to create dependency between Default Management Pack and HPE 3PAR StoreServ File Controller Management Pack for System Center.

8. Click **Monitoring** pane to display the Events and Alerts.
9. Click **Events** in the HPE 3PAR StoreServ File Controller folder. The Events and Alerts of the HPE 3PAR StoreServ File Controller events are displayed.

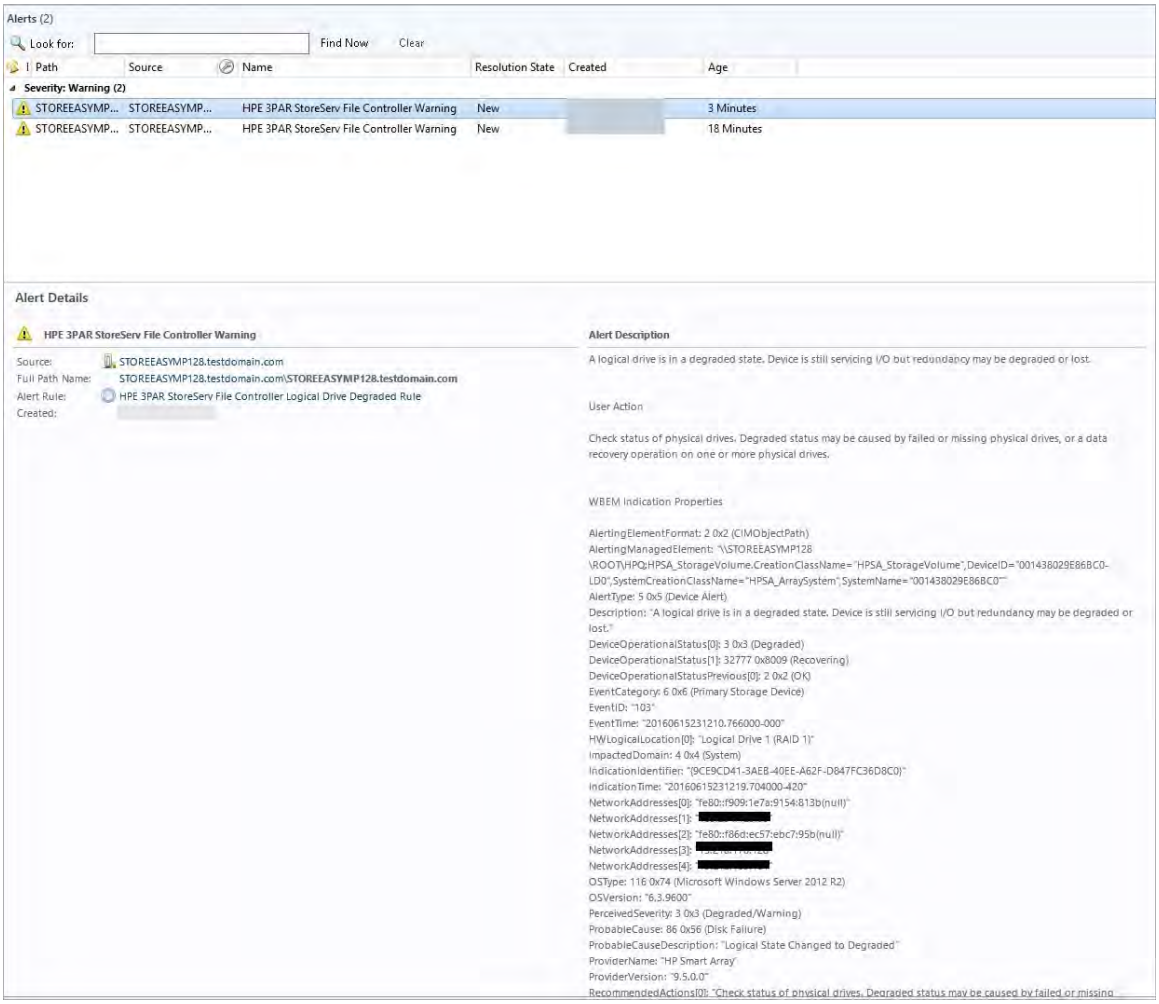


Diagram View of the HPE 3PAR StoreServ File Controller

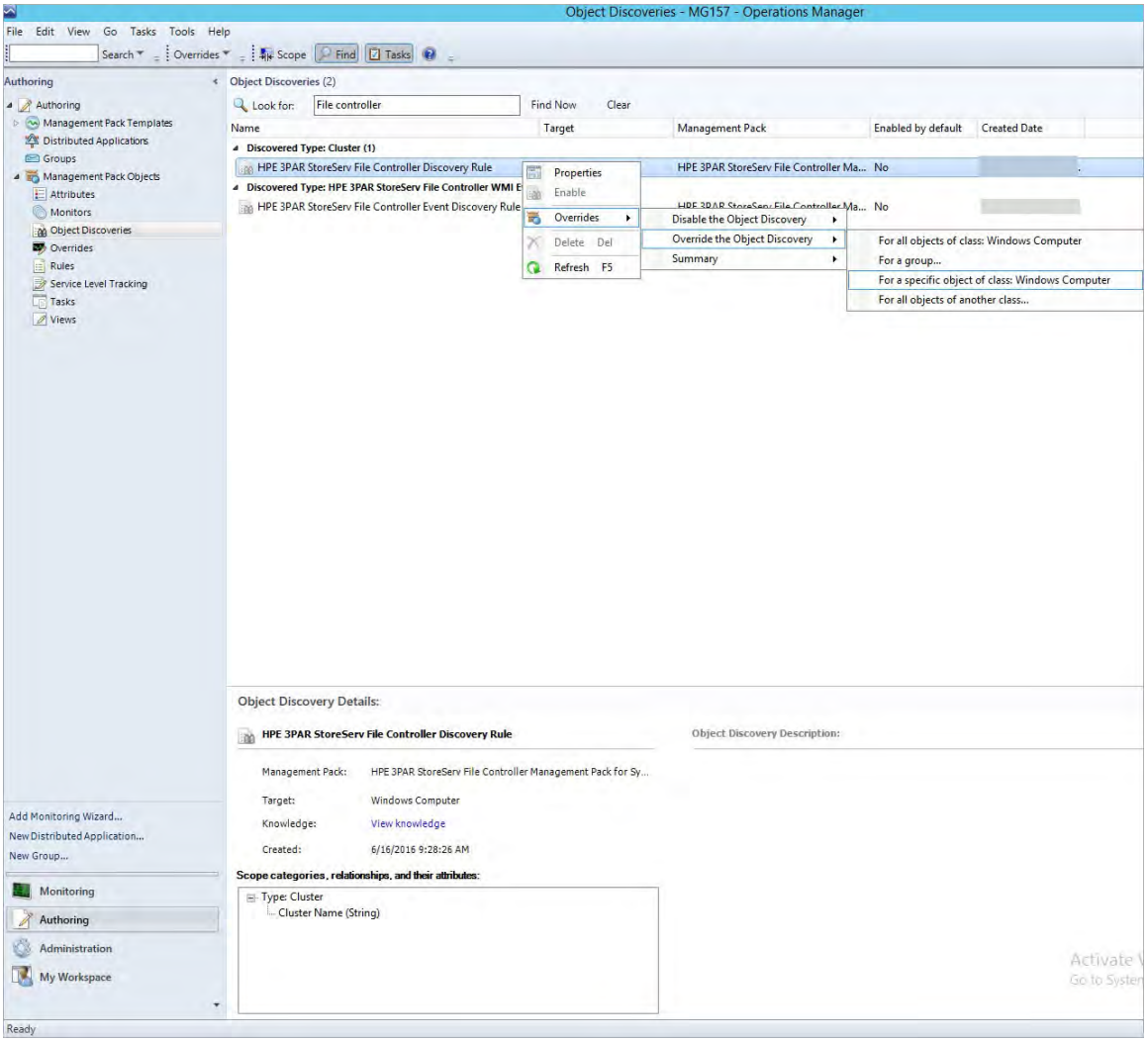
Diagram View displays the diagrammatic representation of the HPE 3PAR StoreServ File Controller. It displays the information in a four level hierarchy as follows:

1. The first level displays the HPE 3PAR StoreServ File Controller group. All the HPE 3PAR StoreServ File Controller discovered will be displayed under this group.
2. The second level displays 3PAR StoreServ File Controller Cluster Disks, Network, and Roles group.
3. The third level displays respective cluster disk, cluster network, and the cluster roles of HPE 3PAR StoreServ File Controller.

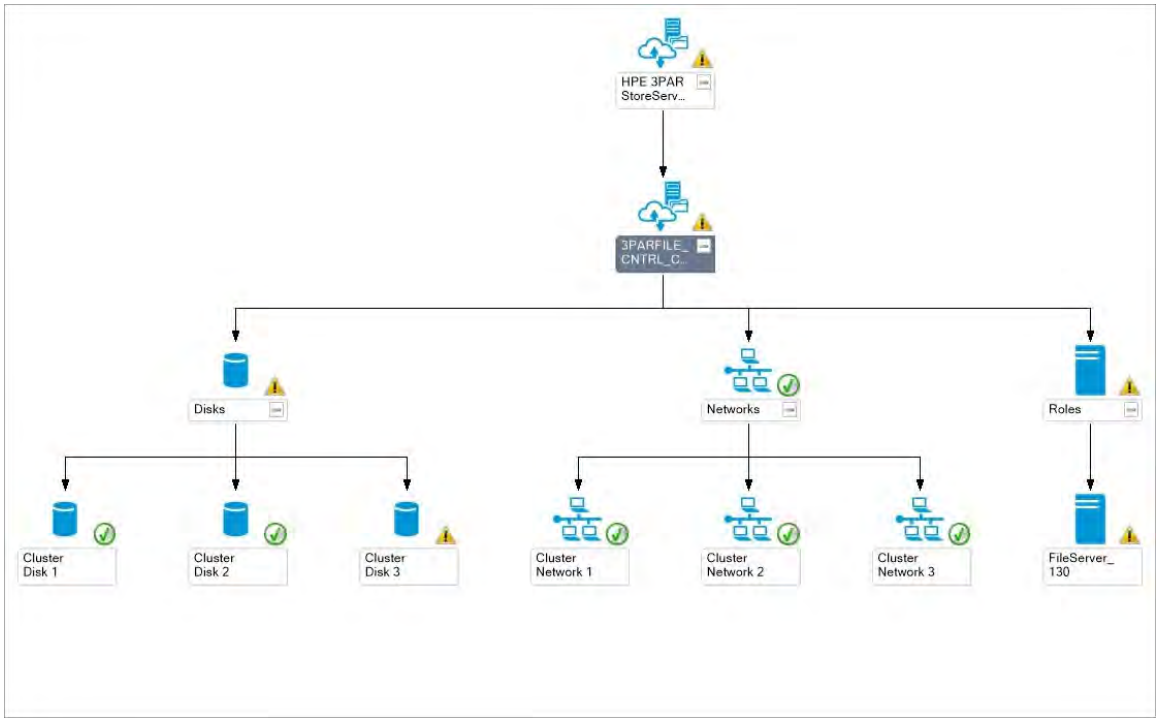
Perform the following steps to see the Diagram View of the HPE 3PAR StoreServ File Controller:

1. Discover the HPE 3PAR StoreServ File Controller using the HPE Storage Management Pack User Configuration Tool. For more information, see **Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool**.
2. Select **Authoring** pane after you discover the HPE 3PAR StoreServ File Controller.
3. Select **Object Discoveries**.
4. To discover the **HPE 3PAR StoreServ File Controller Discovery** perform the following:

- Search for **HPE 3PAR StoreServ File Controller Discovery Rule** using the **Look for**: search bar in the **Object Discoveries** window
- Right-click on **HPE 3PAR StoreServ File Controller Discovery Rule** and select **Override** > **Override the Object Discovery** > **For specific objects of the class**: **Windows Computer**.
- Select the object where the HPE 3PAR StoreServ File Controller is discovered using HPE Storage Management Pack User Configuration Tool and click **OK**.
- Select **Enable** checkbox and set the Override Value to **True**.
- Select **OK**.

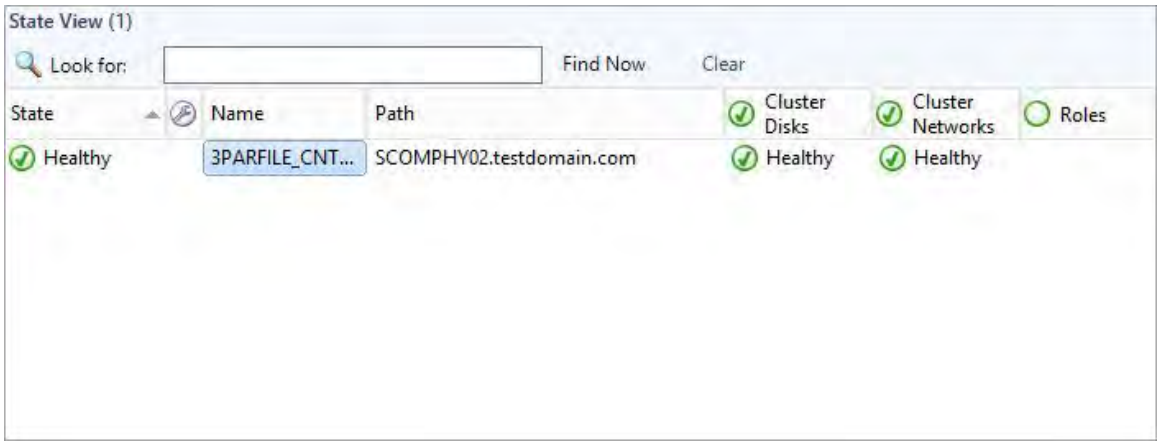


5. Select **Monitoring pane** to display the Monitoring console.
6. Select **Diagram View** in the HPE 3PAR StoreServ File Controller folder. The Diagram view of **HPE 3PAR StoreServ File Controller** is displayed.



State View of HPE 3PAR StoreServ File Controller

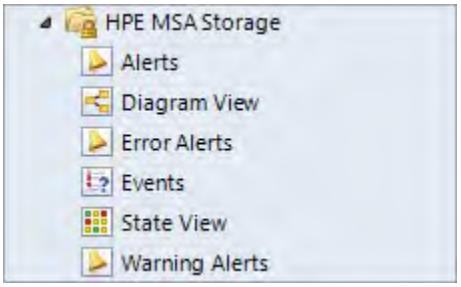
The state view shows all clusters discovered and the overall health state of Cluster Disks, Cluster Networks, and Roles of each configured HPE 3PAR StoreServ File Controller.



Configuring the Management Pack for HPE MSA Storage

Processing Events/Alerts for HPE MSA Storage

The views present in the HPE MSA Storage Management Pack are:



NOTE:

Follow the steps mentioned in **Getting SNMP traps from HPE MSA Storage** on page 76 to register the OpsMgr to the SNMP agent of the HPE MSA Storage.

Once the HPE MSA Storage Management Pack is imported into OpsMgr to receive traps from the HPE MSA device, perform the following steps:

Procedure

1. Launch the OpsMgr console.
2. Click the **Authoring** pane to display the Authoring console. In the Authoring console, click **Object Discoveries**.
3. Search for **HPE MSA SNMP Trap Catcher Rule** using the **Look for:** search bar in the **Object Discoveries** window.
4. Right-click the **HPE MSA SNMP Trap Catcher Rule** and select **Overrides** > **Override the Object Discovery**. Select the option **For a specific object of the class: Windows Computer**.
5. Override the rule for a particular OpsMgr Server Computer Object (list that includes all OpsMgr servers as members). The rule is activated at the OpsMgr server and SNMP traps are received.
6. Select the override property after selecting the object, and change the override setting from False to **True**. Click **Ok** to save it either in the Custom Management Pack or in the Default Management Pack.

   NOTE:

   It is recommended to save the override settings to the Custom Management Pack instead of the Default Management Pack.

   Follow the steps to save the override setting in the Custom Management Pack:

   - Click **New** in the Override Properties dialog box.
   - Enter the name of custom management pack in the text-box, click **Next** and select **Create**.

     This avoids the need to create dependency between Default Management Pack and HPE MSA Management Pack for System Center.
7. Click **Monitoring** pane to display the Events and Alerts.
8. Click **Events** in the **HPE MSA Storage** folder. The Events and Alerts of the HPE MSA is displayed.

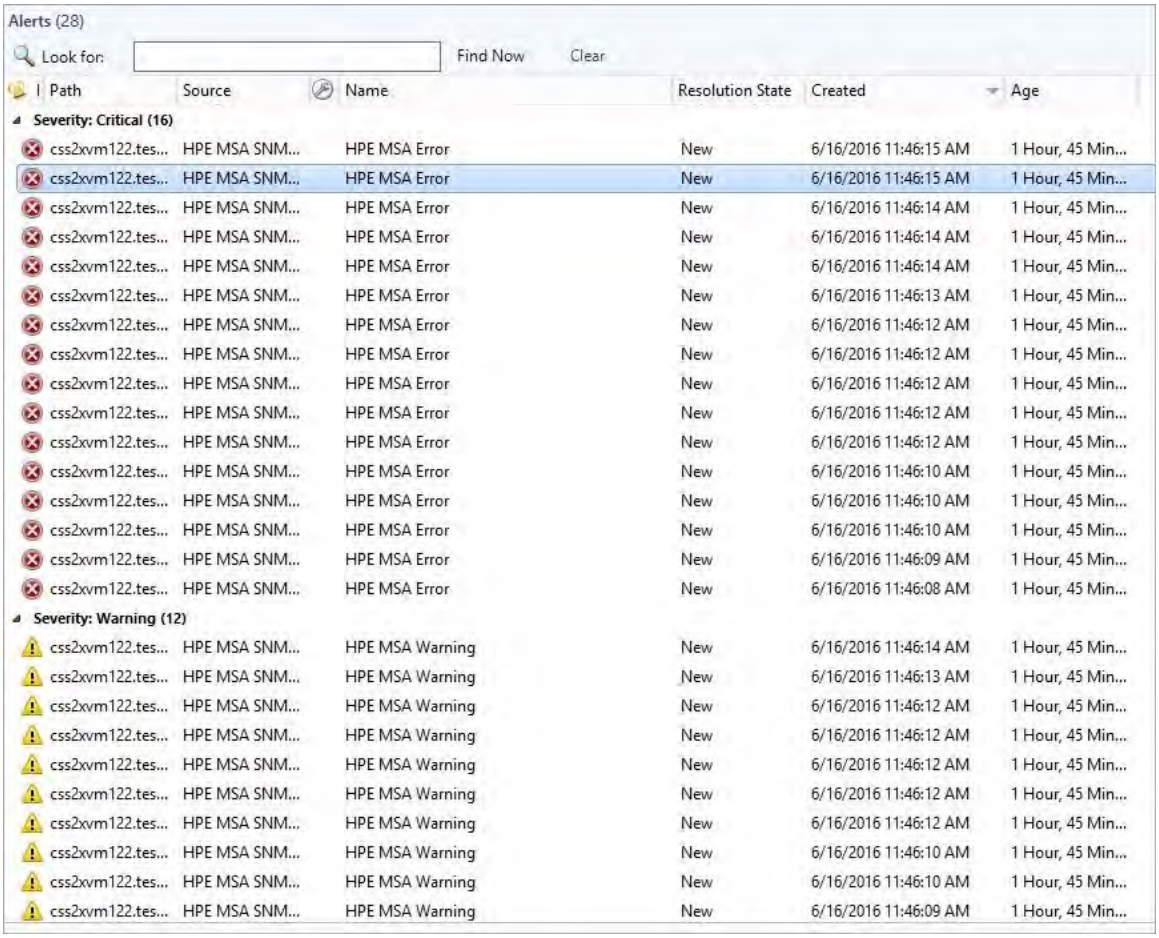


Diagram View of the HPE MSA Storage System

Diagram View displays the diagrammatic representation of HPE MSA Storage system in a six level hierarchy as follows:

Procedure

1. The first level displays the HPE MSA Storage Group.
2. The second level displays all the HPE MSA Storage systems discovered.
3. The third level displays the levels of HPE MSA Storage such as **Logical**, **Physical** and **Virtual**.

   NOTE:

   Logical and Virtual components like Pools, Volumes and Snapshots, and Virtual Machines are supported in G4 and later versions of the HPE MSA Storage Systems.

4. The fourth level displays the component groups of the HPE MSA Storage.

   The following HPE MSA Storage components are monitored:

   - Controllers
   - Physical Disks
   - Ports
   - Power Suppliers
   - Pools

- Volumes and Snapshots
- Virtual Machines

5. The fifth level shows few HPE MSA storage components and few HPE MSA storage component Groups:

   - Linear Storage Pool
   - Virtual Storage Pool
   - Linear Snapshots
   - Linear Volumes
   - Virtual Snapshots
   - Virtual Volumes

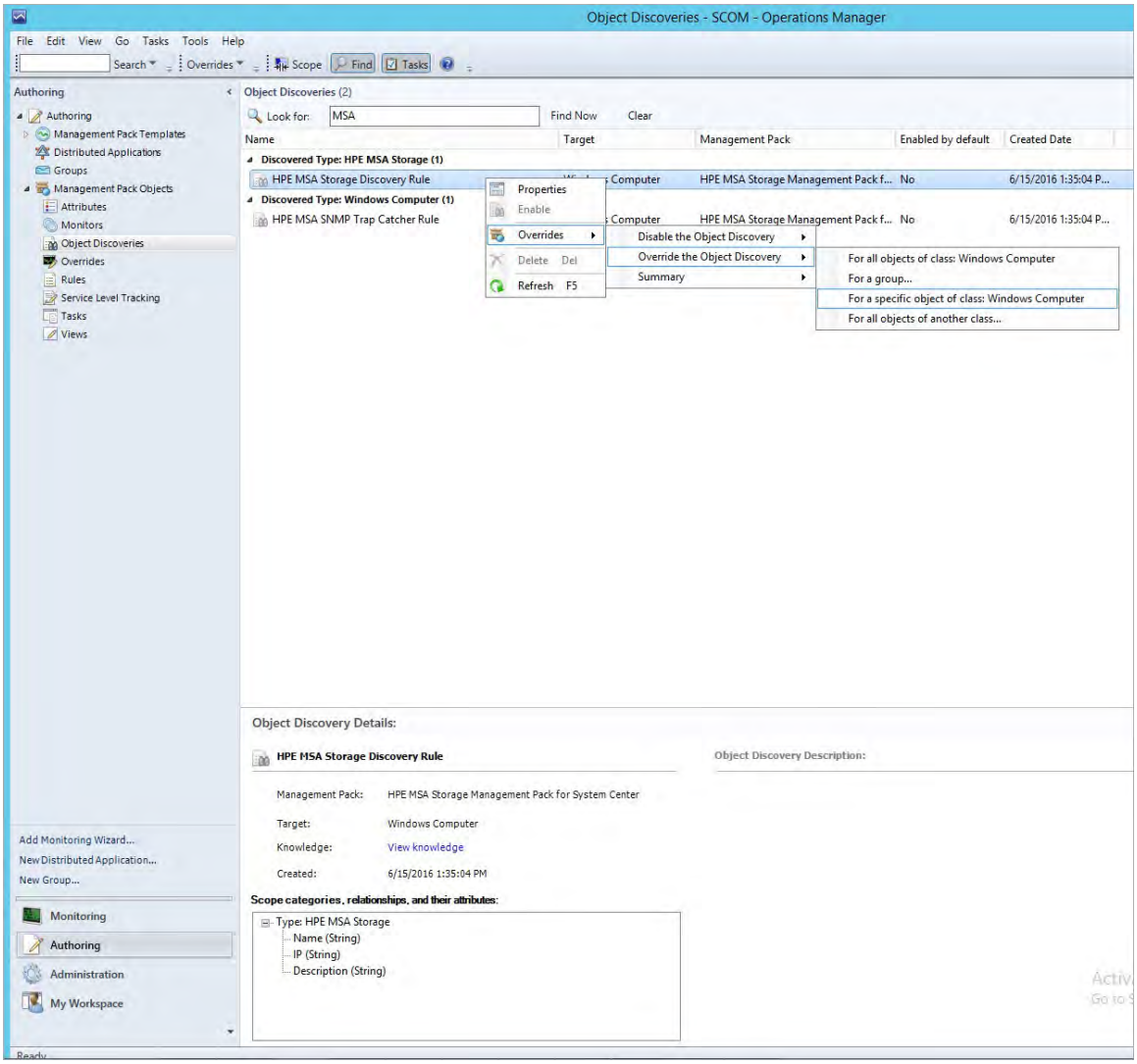
   It also contains components of controller, Physical disk, Power supplies, Ports, Virtual Machines
6. The sixth level shows components of below groups

   - Linear Storage Pool
   - Virtual Storage Pool
   - Linear Snapshots
   - Linear Volumes
   - Virtual Snapshots
   - Virtual Volumes

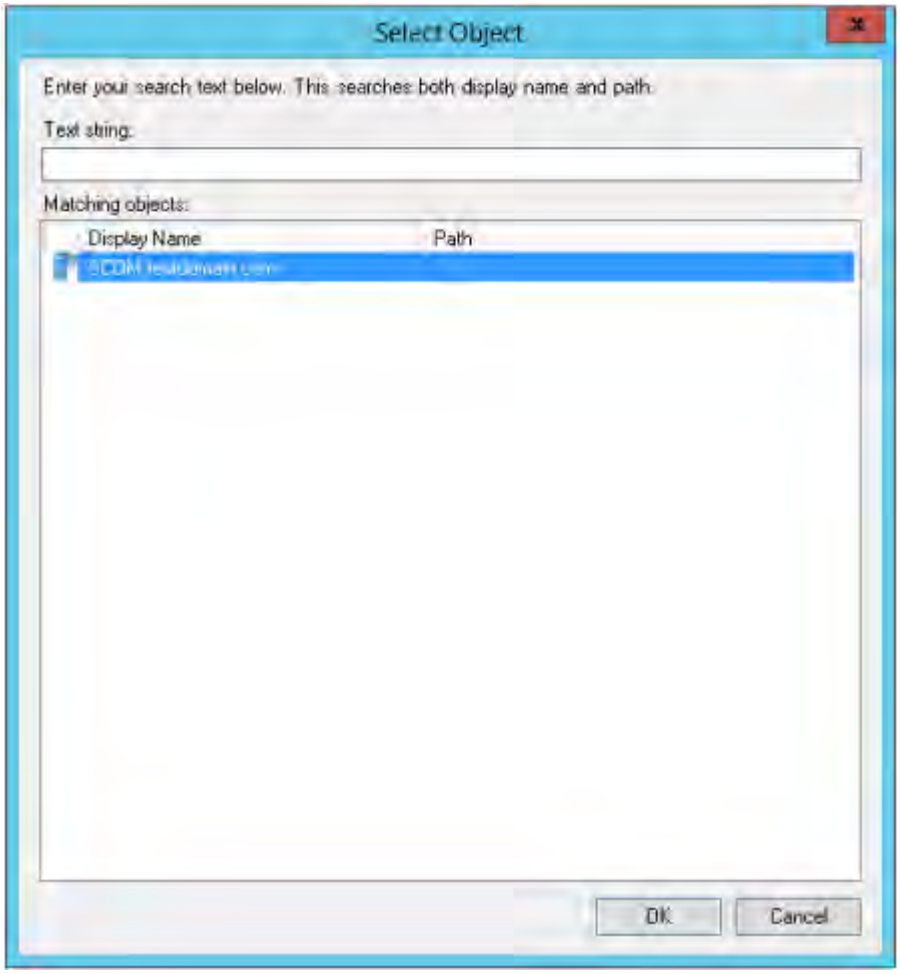
Perform the following steps to see the Diagram View of the HPE MSA Storage:

1. Discover the HPE MSA Storage using the HPE Storage Management Pack User Configuration Tool. For more information, see **Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool** on page 32.
2. Click **Authoring pane** after discovering the HPE MSA Storage. It displays the Authoring console.
3. Select **Object Discoveries** and **Type MSA** in the **Look for:** textbox.

   The MSA rule is displayed.
4. Right-click the **HPE MSA Storage Discovery Rule** and select **Override** > **Override the Object Discovery** > **For specific objects of the class: Windows Computer**.



5. Select the object where the HPE MSA Storage is discovered using HPE Storage Management Pack User Configuration Tool and click **OK**.



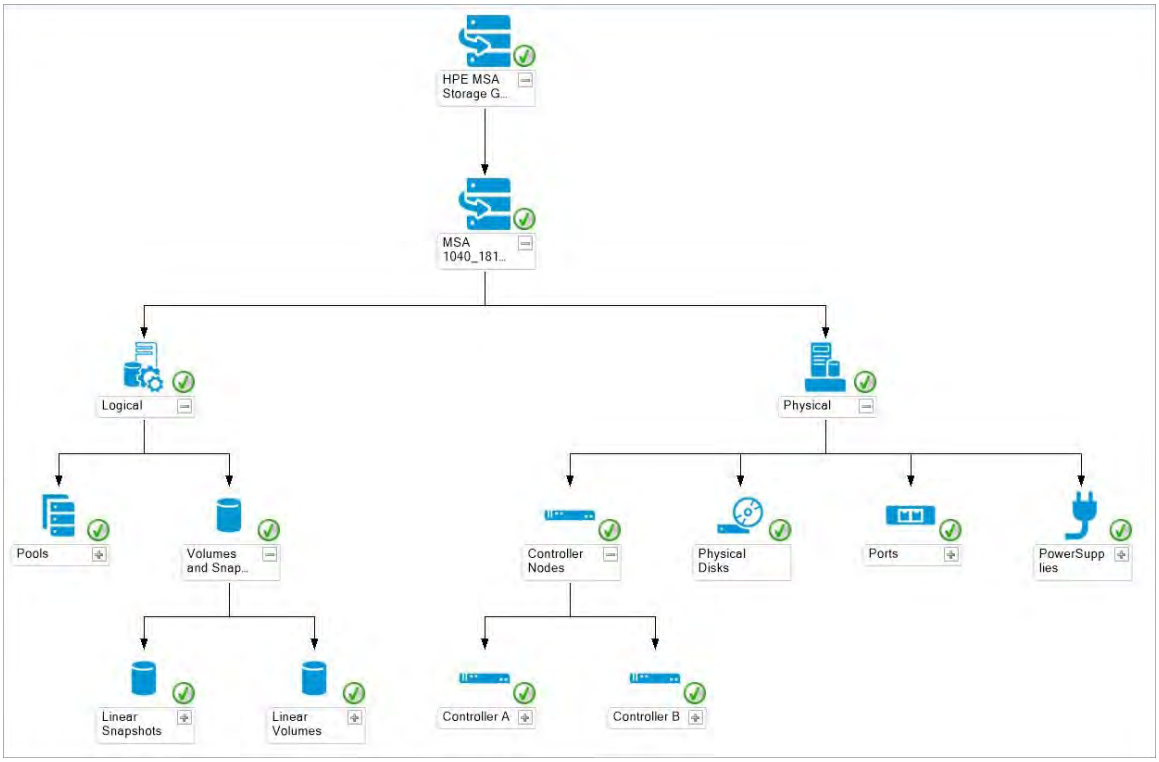
6. Select **Enable** checkbox and set the Override Value to **True**.

   NOTE:

   By default, the Override value is set to 600 seconds, where the rule takes 600 seconds to apply. You can specify a minimum of 150 seconds as the override value.

   For example, if you change the override value to 150 seconds, then the rule will take 150 seconds to apply. In case you change the Override Value, navigate to the last option, select the destination Management Pack on the page and click **New**. Type a name for the management pack and click **Save**.

7. Click **OK**.
8. Click **Monitoring pane** to display the Monitoring console.
9. Click **Diagram View** in the HPE MSA Storage folder. The Diagram view of the HPE MSA is displayed.



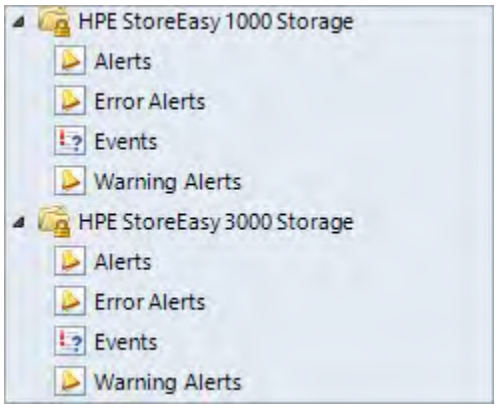
NOTE:

To upgrade the MSA, see **Upgrading HPE Storage Management Pack for System Center**.

Configuring the Management Pack for HPE StoreEasy 1000 and HPE StoreEasy 3000 Storage

Processing Events/Alerts for HPE StoreEasy 1000 and HPE StoreEasy 3000 Storage

The following views are present in HPE StoreEasy 1000 and HPE StoreEasy 3000 Storage Management Pack:



Once the HPE StoreEasy 1000 and HPE StoreEasy 3000 Storage Management Pack is imported into OpsMgr to receive WMI events from the StoreEasy 1000 and HPE StoreEasy 3000 Storage device, perform the following steps:

1. Launch the OpsMgr console.
2. Click the **Authoring** pane to display the Authoring console. In the Authoring console, click **Object Discoveries**.
3. Search for **HPE StoreEasy 1000 and 3000 Event Discovery Rule** using the **Look for:** search bar in the Rules window.
4. Right-click the **HPE StoreEasy 1000 and 3000 Event Discovery Rule** and select **Overrides** > **Override the Rule**.
5. Select **For a specific object of the class: Windows Computer**.
6. Override the rule for a particular HPE StoreEasy 1000 or HPE StoreEasy 3000. The rule is activated at the OpsMgr server, and WMI events are received.
7. Select the override property after selecting the HPE StoreEasy 1000 or HPE StoreEasy 3000 server, and change the override setting from False to **True**. Click **Ok** to save it to the Default Management Pack.

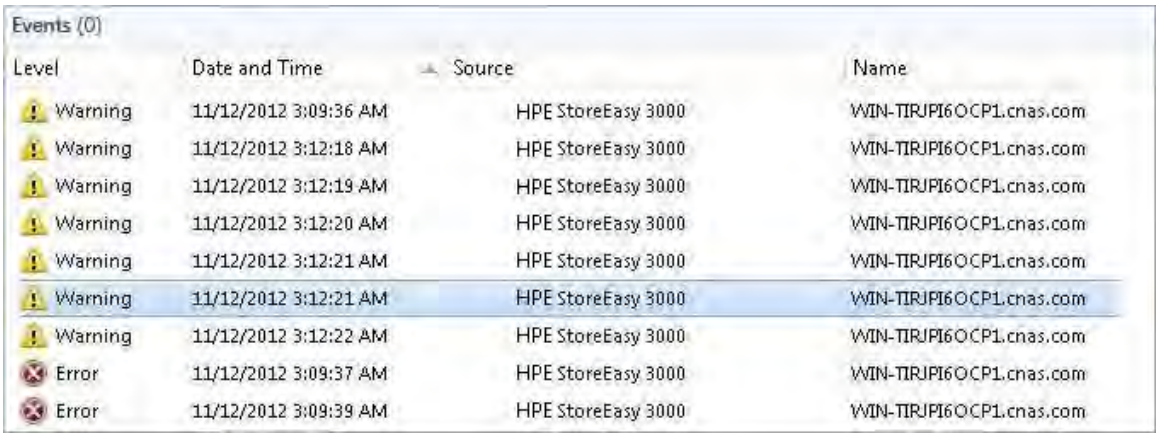
   NOTE:

   It is recommended to save the override settings to the Custom Management Pack instead of the Default Management Pack.

   Follow the steps to save the override setting in the Custom Management Pack:

   - Click **New** in the Override Properties dialog box.
   - Enter the name of custom management pack in the text-box, click **Next** and select **Create**.This avoids the need to create dependency between Default Management Pack and HPE StoreEasy 1000 and 3000 Management Pack for System Center.
   - Click **Monitoring** pane to display the Events and Alerts.

8. Click **Events** in the HPE StoreEasy 1000 and 3000 Storage folder. The Events and Alerts of the HPE StoreEasy 1000 and 3000 events are displayed.



Configuring the Management Pack for HPE XP 9000 Storage

Processing Events/Alerts for HPE XP 9000 Storage

NOTE:

Follow the steps mentioned in **Getting SNMP traps from HPE XP 9000** on page 77 to register the OpsMgr to the SNMP agent of the HPE XP 9000 Storage.

Once the HPE XP 9000 Storage Management Pack is imported into OpsMgr to receive traps from the XP 9000 Storage, perform the following steps:

1. Launch the OpsMgr console.
2. Click the **Authoring** pane to display the Authoring console. In the Authoring console, click **Object Discoveries**.
3. Search for **HPE XP 9000 SNMP Trap Catcher Rule** using the **Look for:** search bar in the Rules window.
4. Right-click the **HPE XP 9000 SNMP Trap Catcher Rule** and select **Overrides** > **Override the Rule**.
5. Override the rule for a particular OpsMgr Server Computer Object (list that includes all OpsMgr servers as members), The rule is activated at the OpsMgr server, and SNMP traps are received.
6. Select the override property after selecting the object, and change the override setting from False to **True**. Click **Ok** to save it to the Default Management Pack.

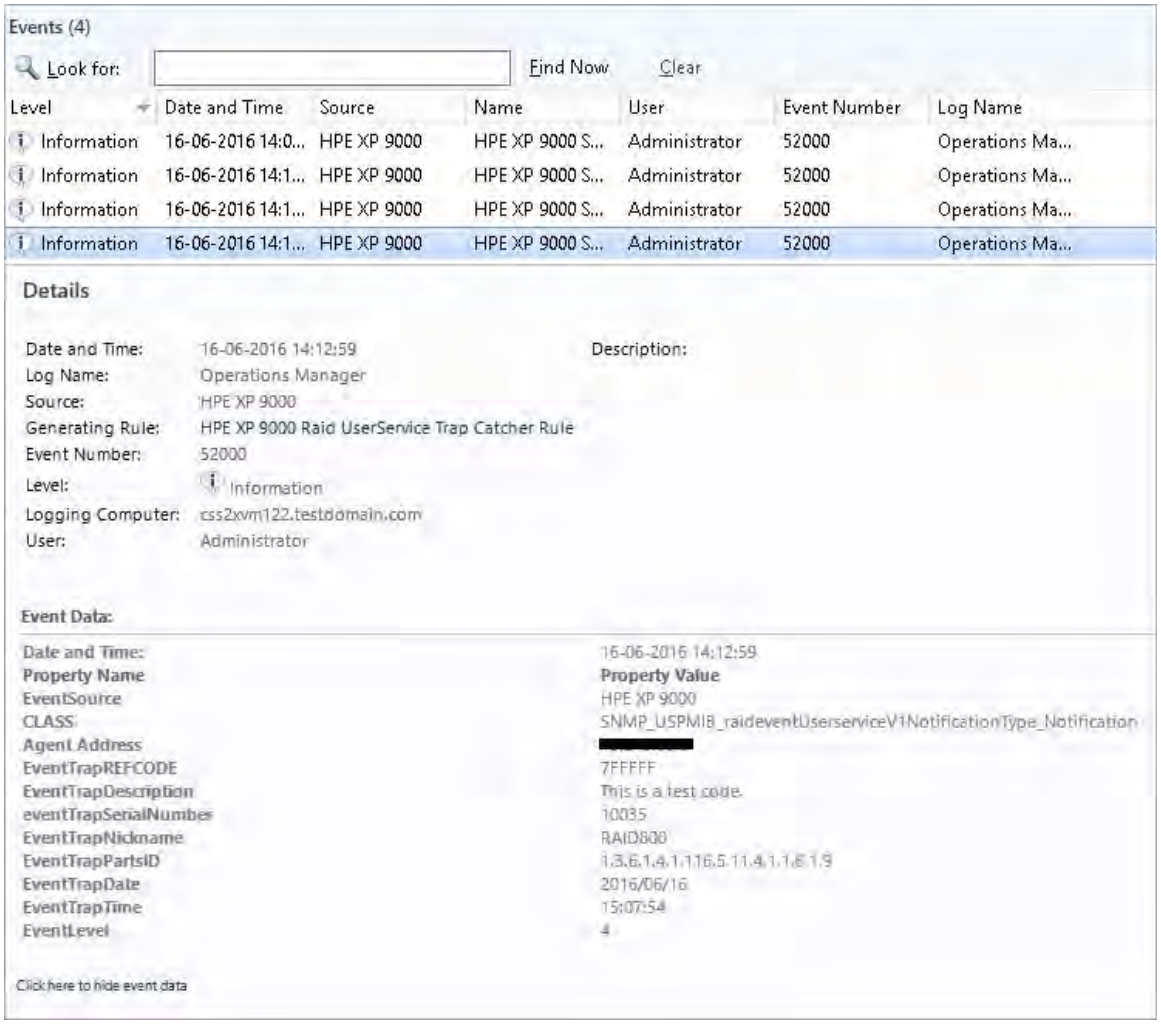
   NOTE:

   It is recommended to save the override settings to the Custom Management Pack instead of the Default Management Pack.

   Follow the steps to save the override setting in the Custom Management Pack:

   - Click **New** in the Override Properties dialog box.
   - Enter the name of custom management pack in the text-box, click **Next** and select **Create**. This avoids the need to create dependency between Default Management Pack and HPE XP 9000 Storage Management Pack for System Center.

7. Click **Monitoring** pane to display the Events and Alerts.
8. Click **Events** in the HPE XP 9000 Storage folder. The Events and Alerts of the HPE XP 9000 are displayed.



Configuring the Management Pack for HPE StoreOnce Backup

Processing Events/Alerts for HPE StoreOnce Backup

NOTE:

Follow the steps mentioned in **Getting SNMP traps from HPE StoreOnce Backup** on page 77 to register the OpsMgr to the SNMP agent of the HPE StoreOnce Backup.

Once the HPE StoreOnce Backup Management Pack is imported into OpsMgr to receive traps from the StoreOnce Backup, perform the following steps:

Perform the following steps to check the events or alerts generated from the StoreOnce Backup:

1. Launch the OpsMgr console.
2. Click the **Authoring** pane to display the Authoring console. In the Authoring console, click **Object Discoveries**.
3. Search for **HPE StoreOnce SNMP Trap Catcher Rule** using the **Look for:** search bar in the Rules window.
4. Right-click the **HPE StoreOnce SNMP Trap Catcher Rule** and select **Overrides** > **Override the Rule**.
5. Select **For a specific object of the class: Windows Computer**.

6. Override the rule for a particular OpsMgr Server Computer Object (list that includes all OpsMgr servers as members), The rule is activated at the OpsMgr server, and SNMP traps are received.
7. Select the override property after selecting the object, and change the override setting from **False** to **True**. Click **Ok** to save it to the Default Management Pack.

   NOTE:

   It is recommended to save the override settings to the Custom Management Pack instead of the Default Management Pack.

   Follow the steps to save the override setting in the Custom Management Pack:

   - Click **New** in the Override Properties dialog box.
   - Enter the name of custom management pack in the text-box, click **Next** and select **Create**.
   - If the alert information in the SCOM console is not adequate, use the ID and verify the information in Store Once GUI.

   This avoids the need to create dependency between Default Management Pack and HPE StoreOnce Backup Management Pack for System Center.
8. Click **Monitoring** pane to display the Events and Alerts.
9. Click **Events** in the HPE StoreOnce Backup folder. The Events and Alerts of the HPE StoreOnce Backup are displayed.

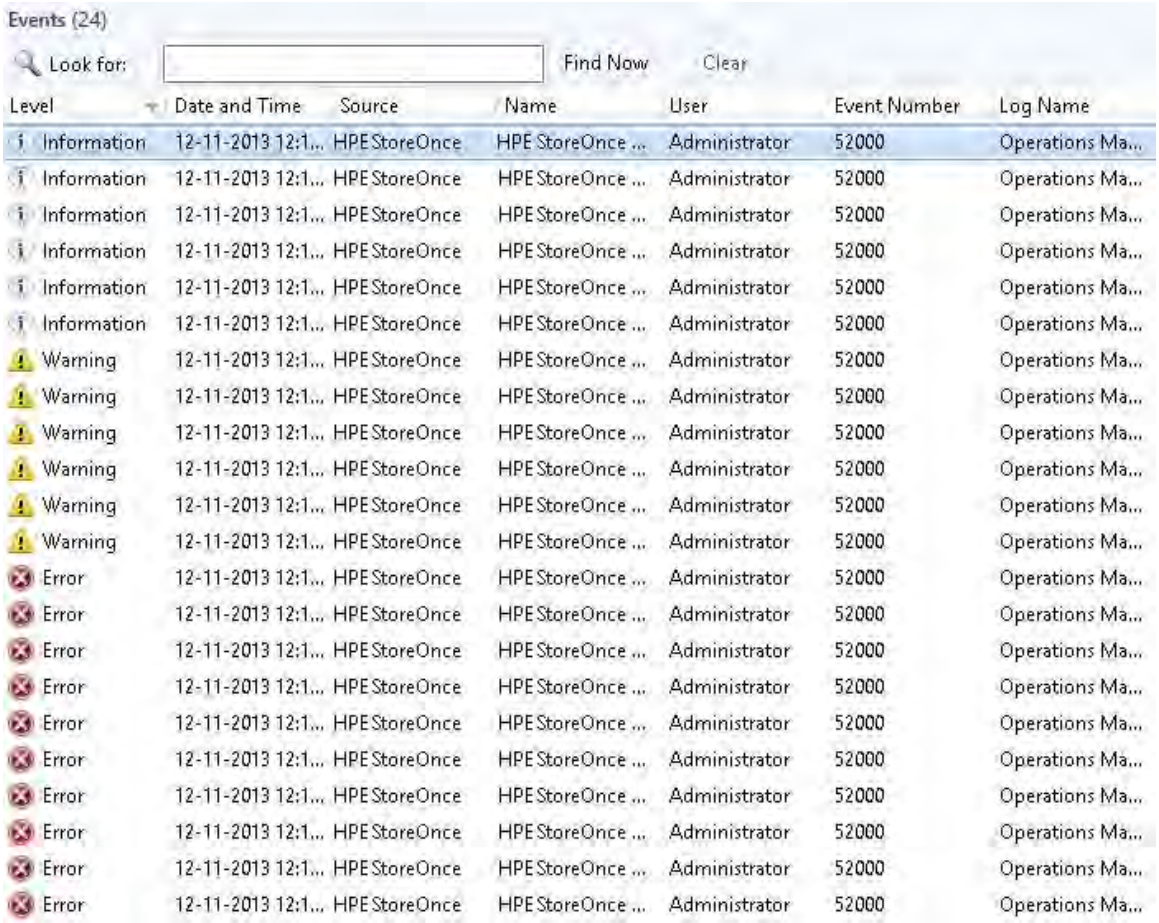


Diagram View of the HPE StoreOnce Backup Storage System

Diagram View displays the diagrammatic representation of HPE StoreOnce Backup Storage system in a six level hierarchy as follows:

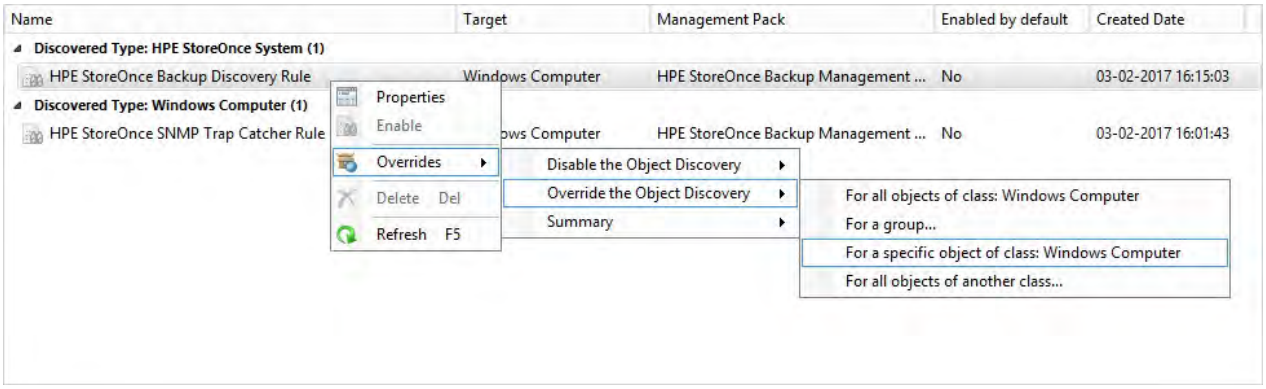
1. The first level displays the HPE StoreOnce Backup Storage Group.
2. The second level displays all the HPE StoreOnce Backup Storage Systems discovered.
3. The third level displays the **Logical Group** of HPE StoreOnce Backup Storage System.
4. The fourth level displays the logical component groups of the HPE StoreOnce Backup Storage System like **NAS**, **Replication**, **StoreOnce Catalyst**, and **VTL**.
5. The fifth level shows groups of logical sub-components of HPE StoreOnce Backup Storage System. These are **Shares**, **NAS Mappings**, **VT Mappings**, **Stores** and **Libraries**.
6. The sixth level shows components of above logical sub-component groups.

Perform the following steps to see the Diagram View of the HPE StoreOnce Backup Storage System:

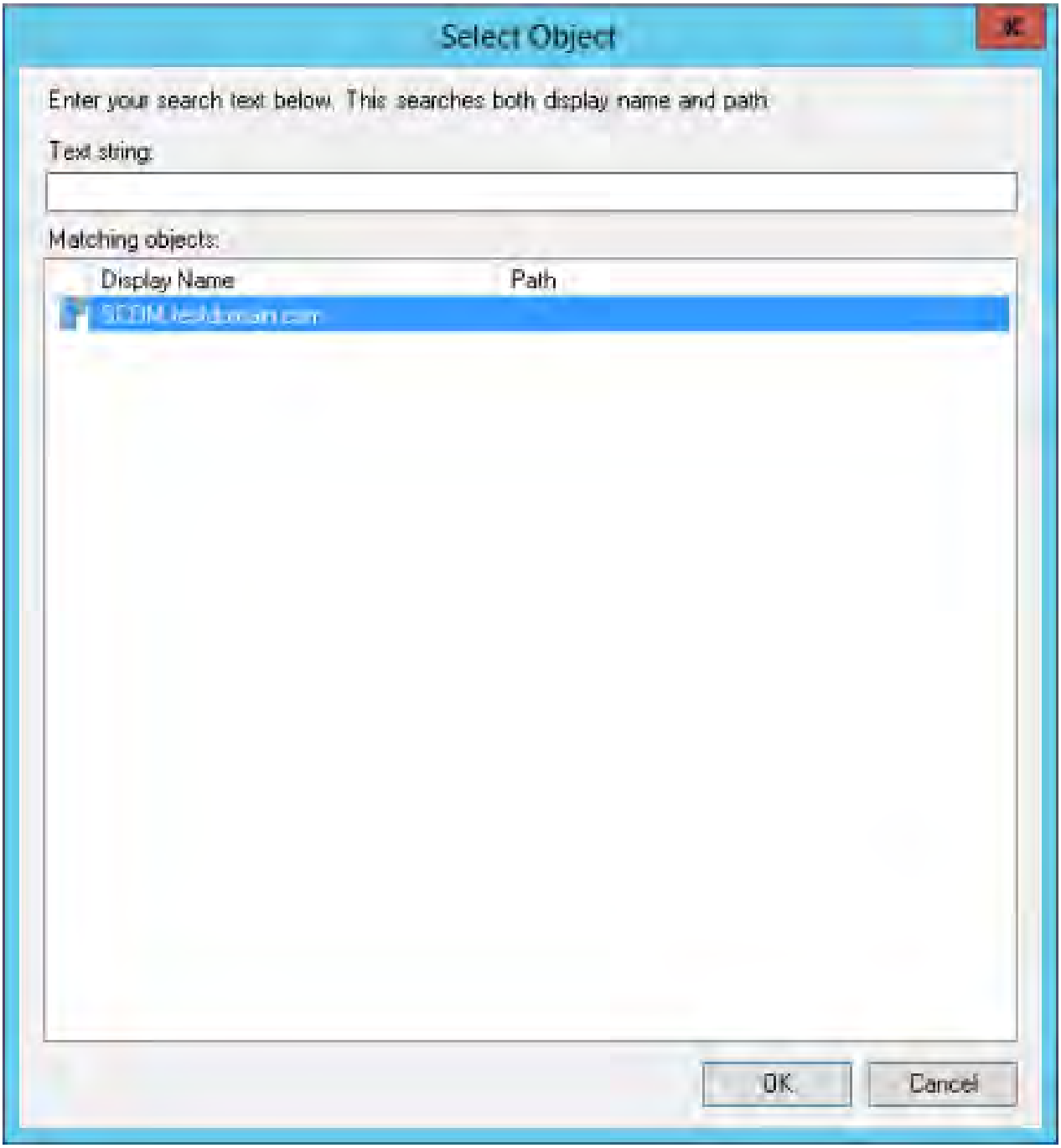
Procedure

1. Discover the HPE StoreOnce Backup Storage System using the HPE Storage Management Pack User Configuration Tool.

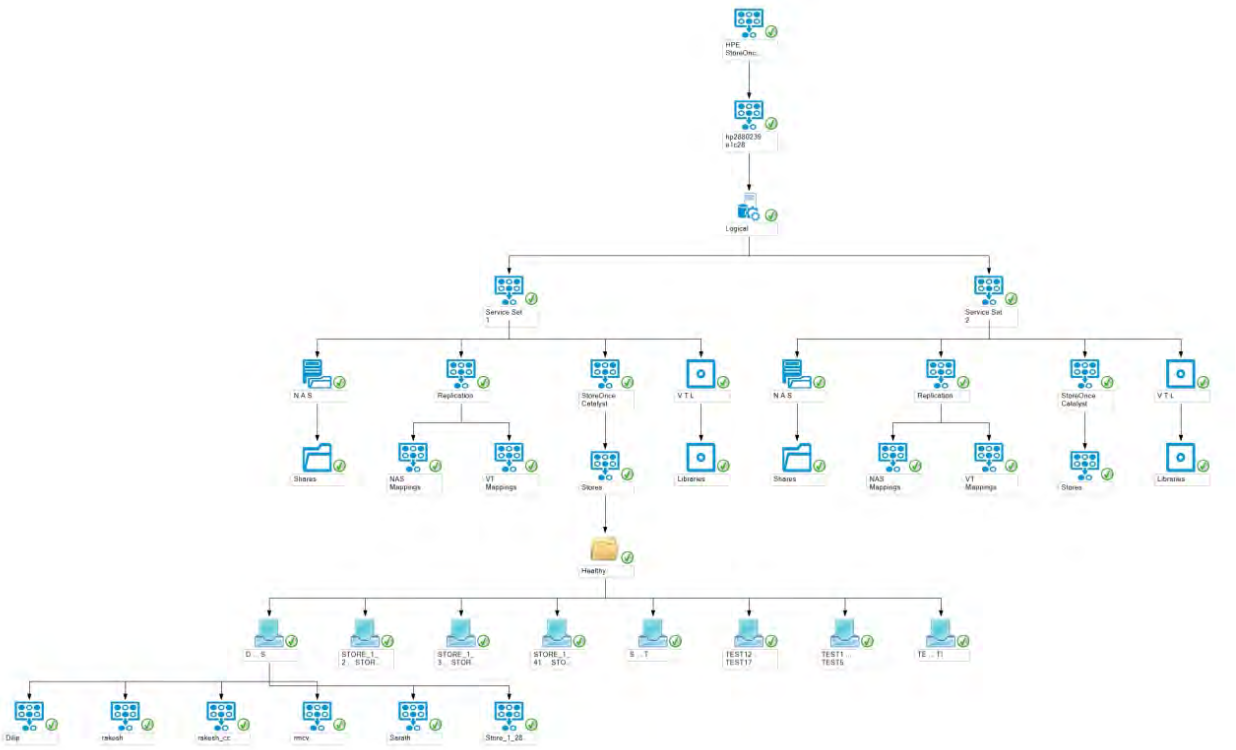
   For more information, see **Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool**.
2. Click Authoring pane after discovering the HPE StoreOnce Backup Storage System. It displays the Authoring console.
3. Select **Object Discoveries** and type **StoreOnce** in the **Look for:** textbox.
4. Right-click the **HPE StoreOnce Backup Discovery Rule** and select **Override** > **Override the Object Discovery** > **For a specific object of class: Windows Computer**.



5. Select the object where the HPE StoreOnce Backup Storage System is discovered using HPE Storage Management Pack User Configuration Tool and click **OK**.

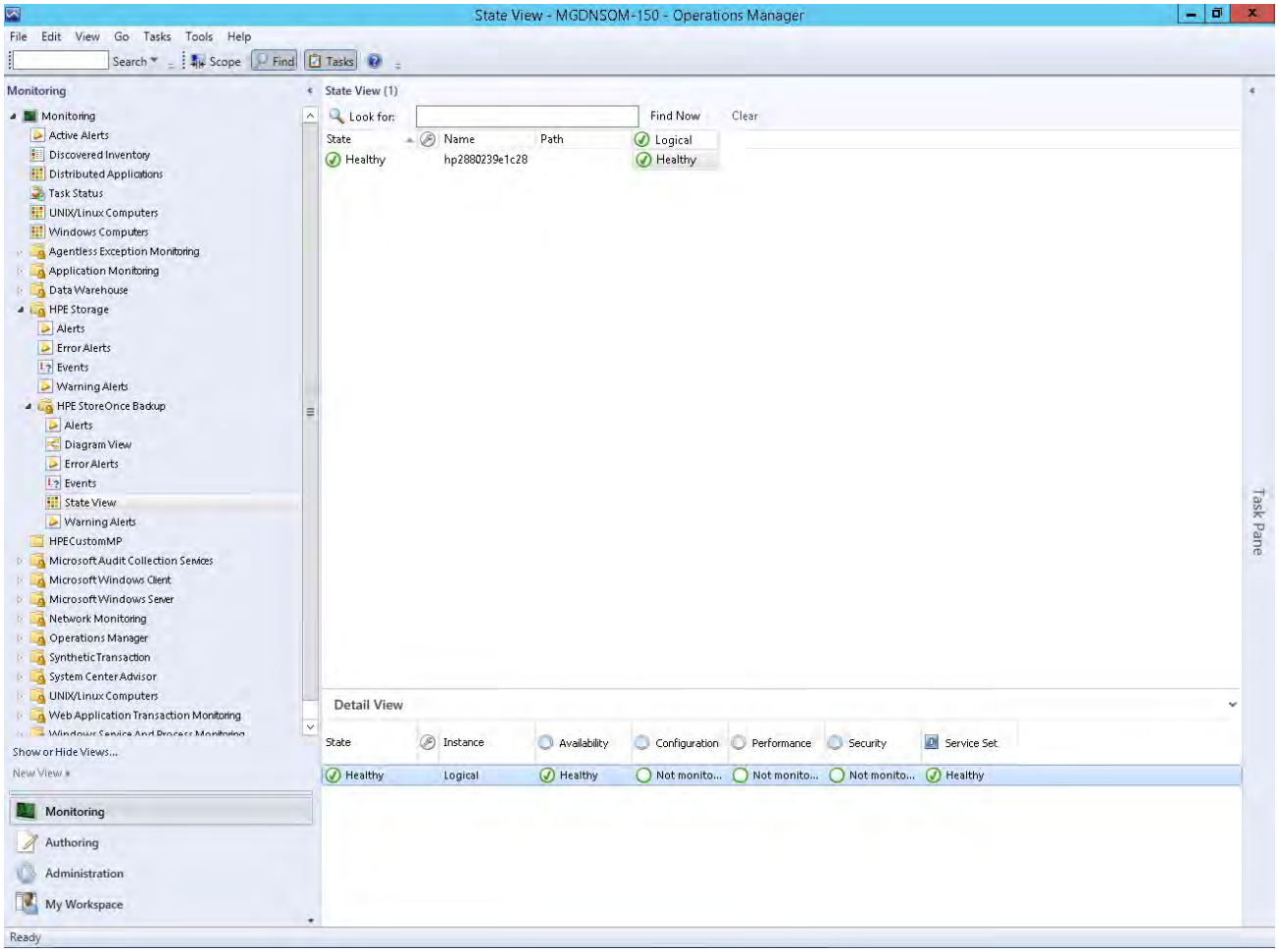


6. Select **Enable** checkbox and set the Override Value to **True**.
7. Click **OK**.
8. Click **Monitoring pane** to display the Monitoring console.
9. Click **Diagram View** in the HPE StoreOnce Backup folder.



State View of HPE StoreOnce Backup Storage System

The state view shows the health of HPE StoreOnce Backup Storage System and the overall health state of its logical components.



Configuring the Management Pack for HPE StoreEver Tape Libraries

Processing Events/Alerts for HPE StoreEver Tape Libraries

Follow the steps mentioned in **Getting SNMP traps from HPE StoreEver Tape Libraries** on page 78 to register the OpsMgr to the SNMP agent of the HPE StoreEver Tape Libraries.

Once the HPE StoreEver Tape Libraries Management Pack is imported into OpsMgr to receive traps from the StoreEver Tape Libraries, perform the following steps:

1. Launch the OpsMgr console.
2. Click **Authoring** pane to display the Authoring console. In the Authoring console, click **Object Discoveries**.
3. Search for **HPE StoreEver Tape Libraries SNMP Trap Catcher Rule** using the **Look for:** search bar in the Rules window.
4. Right-click the **HPE StoreEver Tape Libraries SNMP Trap Catcher Rule** and select **Overrides** > **Override the Rule**.
5. Select **For a specific object of the class: Windows Computer**.
6. Override the rule for a particular OpsMgr Server Computer Object (list that includes all OpsMgr servers as members), The rule is activated at the OpsMgr server, and SNMP traps are received.
7. Select the override property after selecting the object, and change the override setting from False to **True**. Click **Ok** to save it to the Default Management Pack.

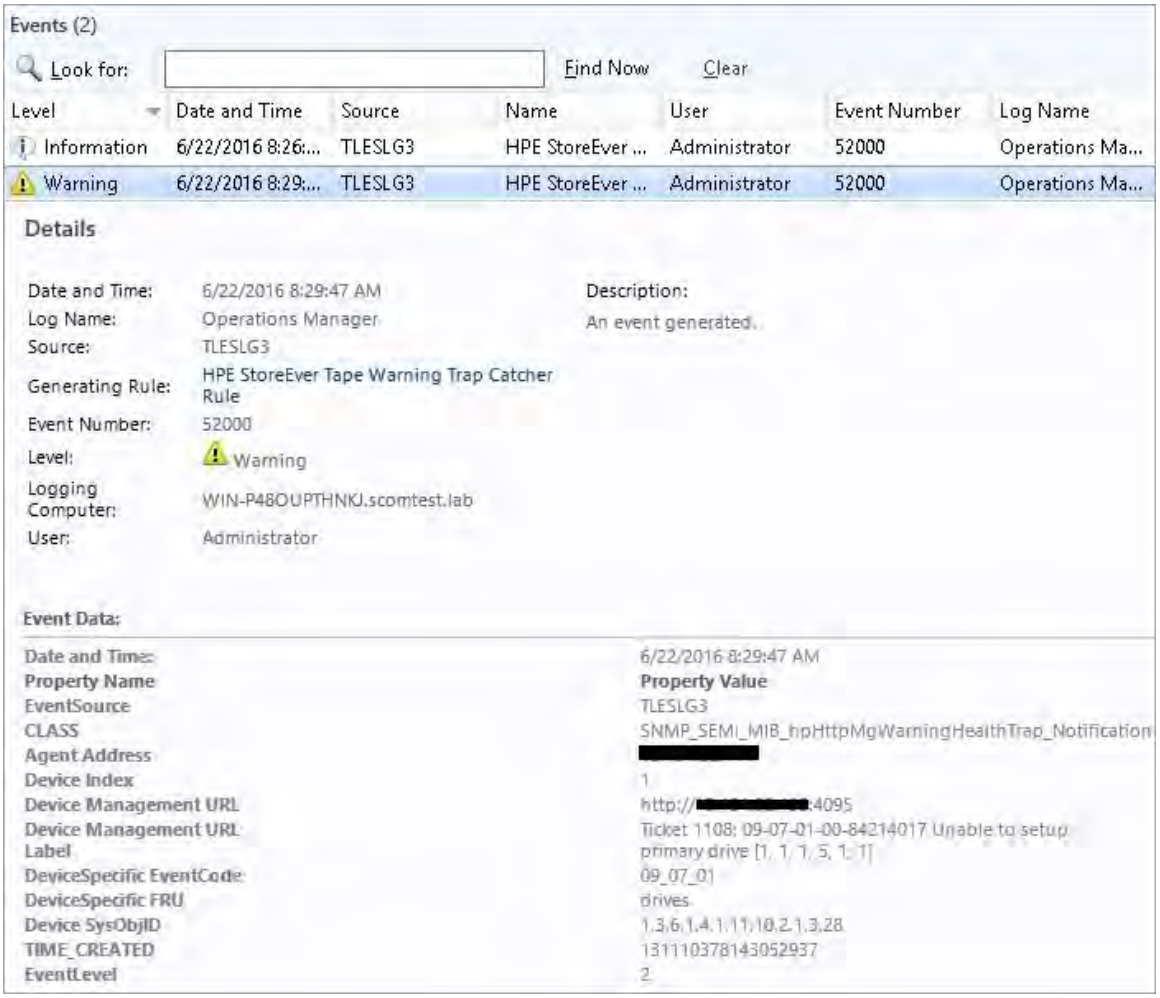
NOTE:

It is recommended to save the override settings to the Custom Management Pack instead of the Default Management Pack.

Follow the steps to save the override setting in the Custom Management Pack:

- Click **New** in the Override Properties dialog box.
- Enter the name of custom management pack in the text-box, click **Next** and select **Create**.This avoids the need to create dependency between Default Management Pack and HPE StoreEver Tape Libraries Management Pack for System Center.

8. Click **Monitoring** pane to display the Events and Alerts.
9. Click **Events** in the HPE StoreEver Tape Libraries folder. The Events and Alerts of the HPE StoreEver Tape Libraries are displayed.



Configuration for monitoring device

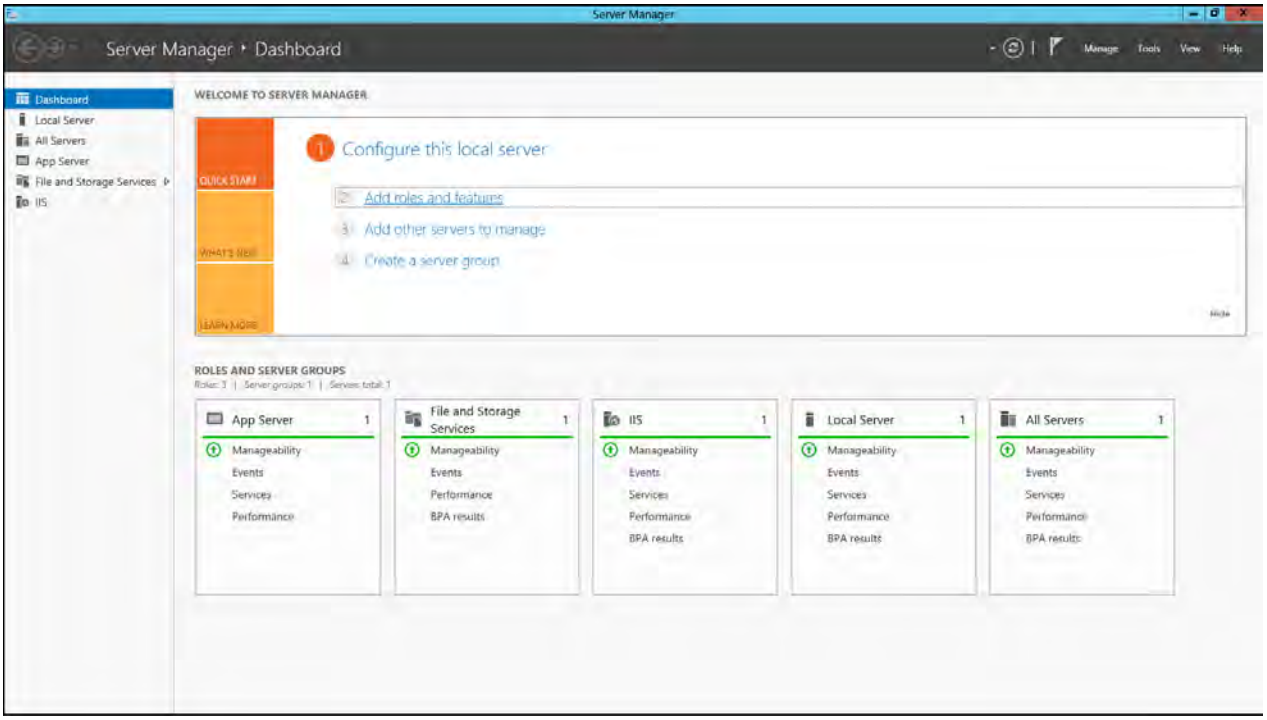
SNMP

Configuration of SNMP service

Complete the following steps to install SNMP on Windows 2012 Server or later:

Procedure

1. Launch the Server Manager.



2. Select **Features**.
3. Click **Add Features** from the **Features** pane.
4. Select the SNMP Service and SNMP WMI Provider from the list and click **Next**.
5. Click **Install**.

Configuration of OpsMgr Server to process SNMP traps

Enable the SNMP Trap catcher in the HPE Storage Management Pack. For information on enabling the SNMP Trap Catcher, see the configuration sections of the respective HPE storage devices.

Please traverse to the Windows service control manager and check if the services `SNMP Service` and `SNMP Trap` are installed and started.

Create an Event or Alert view in the OpsMgr console with the target as SNMP Trap Catcher discovery. Send some test traps from the device managed to the OpsMgr station.

Events/Alerts will be displayed in the console under the View created. If Events/Alerts are not displayed under the view, check for any errors in the SNMP trap destination setting. Review the trap destination setting for the HPE 3PAR StoreServ Storage, HPE StoreVirtual Storage, HPE MSA Storage, HPE XP 9000, HPE StoreOnce Backup, and HPE StoreEver Tape Libraries.

In the OpsMgr, the SNMP service and SNMP trap service must be running.

Configuring SNMP service

Procedure

1. Go to the **Properties** window of the SNMP service.
2. On the **Traps** tab, enter the community name of the HPE Storage device that must be monitored.
3. Click **Add to list**.
4. On **Trap destinations**, click **Add**, and enter `localhost`.
5. Click **Apply**.
6. Go to the Security tab.
7. On the Accepted community names tab, click Add.
8. Enter the community name of the HPE Storage Device, and click Add.
9. Select **Accept SNMP packets** from any host.
10. If **Accept SNMP packets from these hosts** is selected, then ensure that you add the HPE storage device to the list.
11. Click **Apply** and **OK**.

Getting SNMP Traps from HPE 3PAR StoreServ Storage

The SNMP agent of the HPE 3PAR StoreServ Storage converts all system alerts and alert state changes into SNMPv2 traps and forwards them to all registered SNMP management stations.

Follow the steps to register the OpsMgr or the collection point to the SNMP agent of the HPE 3PAR StoreServ Storage:

1. Login to the HPE 3PAR StoreServ Storage array through CLI.
2. Type the `addsnmpmgr` command for setting the trap recipient address.For example:

   ```
   addsnmpmgr [options <arg>] <manager_IP>
   ```

   - `[options <arg>]`

     a. `-p <port_number>`

        Specifies the port number where the SNMP manager receives traps. This option is used if the port number differs from the default of 162.

     b. `-pw <password>`

        Specifies the SNMP manager’s access community string (password), using up to 32 alphanumeric characters. If unspecified, the agents send traps without an access password.

     c. `-r <retry>`

        Specifies the number of times to send a trap (

        `<retry>`

) using an integer from 1 through 15 if the SNMP manager is not available. If not specified, the number of times a trap is sent defaults to 2.

     d. `-t <timeout>`

        Specifies the number of seconds to wait before sending a trap (

        `<timeout>`

) using an integer from 1 through 300. If not specified, the time defaults to 200 seconds.

   - `<manager_IP>`

     a. Manager_IP address is the OpsMgr server IP address.

NOTE:

You need access to all domains in order to run this command.

After successfully completing these steps, HPE 3PAR StoreServ Storage traps will be forwarded to OpsMgr or the collection point.

Getting SNMP traps from HPE StoreVirtual Storage System

SNMP Trap configuration is done using the HPE LeftHand Centralized Management Console [CMC]. Configuring SNMP Traps involves the following activities:

- **Enabling an SNMP agent** on page 75
- **Adding an SNMP client** on page 75
- **Enabling SNMP traps** on page 76

For more information on configuring SNMP traps, see the HPE StoreVirtual SAN User Manual.

Enabling an SNMP agent

To enable an SNMP agent, complete the following steps:

Procedure

1. Log in to the storage node and expand the tree.
2. Select the **SNMP** category from the tree.
3. On the **SNMP General** tab window, click **SNMP General Tasks** and select **Edit SNMP Settings**.
4. Select the **Enabled** radio button to activate the SNMP Agent fields.
5. Enter the **Community String**.
6. [Optional] Enter **System Location** information for the storage node.

   For example, this information may include the address, building name, room number, and so on.
7. [Optional] Enter **System Contact** information.

   Normally this will be network administrator information such as email address, or phone number for the person you would contact if you could not connect to SNMP clients.

Adding an SNMP client

In the **Access Control** section, click **Add** to add an SNMP client. This SNMP client can be used to view SNMP.

You can add SNMP clients by specifying either IP addresses or host names in the following manner:

- By IP address:
  1. Select "**By Address**" and type the IP address.
  2. Select an IP Netmask from the list. Select **Single Host** if adding only one SNMP client.
  3. Click **OK**. The IP address and netmask entry appear in the **Access Control** list.
  4. Click **OK** in the **Edit SNMP Settings** window to finish.
- By host name:
  1. Select "**By Name**" and type a host name. That host name must exist in DNS and the NSM must be configured with DNS for the client to be recognized by the host name.
  2. Click **OK**.The host name appears in the **Access Control** list.
  3. Click **OK** in the **Edit SNMP Settings** window to finish.

Enabling SNMP traps

You must add a Trap Community String for client-side authentication. To add a Trap Community String complete the following steps:

Procedure

1. Log in to the storage node and expand the tree.
2. Select the **SNMP** category from the tree.
3. Select the **SNMP** Traps tab.
4. Click **SNMP Trap Tasks** and select **Edit SNMP Traps**.
5. Click **Add** to add trap recipients.
6. Enter the IP address or hostname for the SNMP client receiving the traps.
7. Click **OK**.
8. Repeat Step 5 through Step 7 for each host in the trap community.
9. Click **OK** on the **Edit SNMP Traps** window when you are finished adding hosts.

Getting SNMP traps from HPE MSA Storage

Monitoring SNMP traps for G3 and G4 arrays

To monitor G3 and G4 arrays using SNMP traps and OpsMgr, perform the following steps:

Procedure

1. Login to the array's CLI using SSH.
2. Set up and enable SNMP trap destination by running the command as following: set snmp-parameters [enable crit|warn|info|none} [add-trap-hostaddress] [del-trap-host address][read-community string] [write-community string].

Table 5: SNMP parameters and its functions

Parameter	Description
`enable crit|error|warn|info|none`	Optional. Sets the level of the trap notification:crit: Sends notifications for Critical events only.error: Sends notifications for Error and Critical events.warn : Sends notifications for Warning, Error, and Critical events.info: Sends notifications for all events.none: All events are excluded from trap notification and traps are disabled.
`add-trap-host <address>`	Optional. Specifies the IP address of a destination host that will receive traps. Three trap hosts can be set.
`del-trap-host <address>`	Optional. Deletes a trap destination host.
`read-community <string>`	Sets an alpha numeric community string for Read-only access
`Write-community <string>`	Sets an alpha numeric community string for writ-only access
`trap-host-list <trap-host-list>`	Optional. Replaces the current list.

Example:

```
set snmp-parameters enable crit add-trap-host 172.22.4.171

Success: SNMP parameters changed.
```

Getting SNMP traps from HPE StoreOnce Backup

SNMP Trap configuration is done using the Interface Manager which supports SNMP traps/alerts. Configuring SNMP Traps involves the following common SNMP settings:

Trap Destinations: IP addresses of hosts or applications that need to receive SNMP alerts/traps from the Interface Manager. A trap receiver is an SNMP-enabled machine on the LAN that decodes and logs SNMP traps.

Adding an SNMP trap destination

To add a new SNMP trap, enter:

Procedure

1. If necessary, obtain the required network settings from your network administrator.
2. In the StoreOnce GUI window, click **Configuration** tab.
3. Select the **SNMP** tab.
4. In the destinations section, click **Add** button.
5. Enter the Trap Destination IP and Description, and click **Update**.

Editing an SNMP trap destination

To edit an existing trap destination entry:

Procedure

1. In the StoreOnce GUI window, click **Configuration** tab.
2. Select the **SNMP** tab.
3. In the destinations section, select the trap destination IP that needs to be modified and click the **Edit** button.
4. Modify and click the **Update** button.

Removing an SNMP trap destination

To remove an existing trap destination entry:

Procedure

1. In the StoreOnce GUI window, click **Configuration** tab.
2. Select the **SNMP** tab.
3. In the destinations section, select the trap destination IP that needs to be removed and click the **Remove** button.

Getting SNMP traps from HPE XP 9000

To configure XP 9000 devices, complete the following steps:

Procedure

1. Open **www.hpe.com/info/EIL**.
2. Click Product & Solutions and then select XP Storage.
3. The list of XP 9000 array models are displayed.

4. Select the appropriate XP 9000 array model.
5. Download the respective User Guide and use it to configure the respective XP 9000 array.

Example:

For HPE Storage XP24000 Disk Array, click on HPE Storage XP24000 Disk Array and download the SNMP Agent Reference Guide. Use the same to configure the XP 24000 array.

Getting SNMP traps from HPE StoreEver Tape Libraries

SNMP Trap configuration is done using the Interface Manager card which has a built-in SNMP agent that supports queries to MIB-II in addition to SNMP traps/alerts. Configuring SNMP Traps involves the following common **SNMP** settings:

Procedure

1. **Trap Destinations:** IP addresses of hosts or applications that need to receive SNMP alerts/traps from the Interface Manager card. A trap receiver is an SNMP-enabled machine on the LAN that decodes and logs SNMP traps. Up to eight trap destinations can be specified.
2. Plain-text community string or password required by SNMP clients to read or write SNMP MIB values.

Adding an SNMP trap

To add a new SNMP trap entry:

Procedure

1. If necessary, obtain the required network settings from your network administrator.
2. In the Library window, click **Configuration** tab.
3. In the left panel, select **SNMP** Alerts.

   The current SNMP traps appear in the right panel.
4. Do one of the following:
   - In the right panel, right-click an SNMP trap, and select **Add Trap Entry**.
   - Select **Actions** > **Add Trap Entry**.

     The SNMP Trap Entry dialog box appears.
5. Enter the Trap Destination and Community String, and click **OK**.

Editing an SNMP trap

To edit an existing trap entry:

Procedure

1. In the Library window, click **Configuration** tab.
2. In the left panel, select **SNMP** Alerts.

   The current SNMP traps appear in the right panel.
3. Do one of the following:
   - In the right panel, double-click a trap entry.
   - In the right panel, right-click a **trap** entry, and then select **Edit Trap Entry**.
   - In the right panel, select the **trap** entry to be modified, and then select **Actions > Edit Trap Entry**.

   The SNMP Trap Entry dialog box appears.
4. Modify the Trap Destination and Community String as necessary, and click **OK**.

Removing an SNMP trap

To remove an existing trap entry:

Procedure

1. In the Library window, click **Configuration** tab.
2. In the left panel, click **SNMP** Alerts.

   The current SNMP traps appear in the right panel.
3. Do one of the following:
   - In the right panel, right-click the trap entry that you want to remove, and then select **Remove TrapEntry**.
   - In the right panel, select the **trap** entry that you want to remove, and then select **Actions > Remove Trap Entry**.
4. Confirm that you want to delete the **SNMP** trap.

WMI events

Discovering HPE StoreEasy 1000 and HPE StoreEasy 3000 storage

To monitor StoreEasy 1000 and StoreEasy 3000 Storage remotely, the OpsMgr must first discover the StoreEasy 1000 and StoreEasy 3000 . OpsMgr provides discovery options to list the available servers in the domain to be managed.

Prerequisites

- Ensure that the StoreEasy 1000 and StoreEasy 3000 storage and the OpsMgr server are part of the same domain.
- Ensure that the StoreEasy 1000 and StoreEasy 3000 Storage is managed by the management server, with help of OpsMgr Agent installed on the managed device during the discovery process.
- Ensure that you have administrative privileges.

Procedure

1. Run the **Discovery Wizard** in OpsMgr.
2. In the **Computer and Device Management Wizard**, select **Windows Computer**, and click **Next**.
3. Select **Automatic Computer Discovery** and click **Next**.
4. Select the **Other user account** with the domain of **HPE StoreEasy 1000 and HPE StoreEasy 3000**.
5. Click **Discover** after entering the **Username** and **Password**.

   The **Computer and Device Management Wizard** displays the search results.
6. Select the discovered **HPE StoreEasy 1000 and HPE StoreEasy 3000** that you want to monitor.
7. Select **Agent** in the **Management Mode** list box and click **Next**.
8. Click **Finish** after entering the **Username**, **Password**, and appropriate **Domain**.

   Installation of the OpsMgr Agent begins on the selected computer.

9. After successful installation of the OpsMgr Agent, the message **Task completed successfully** is displayed.

Discovery of HPE 3PAR StoreServ File Controller

To monitor the HPE 3PAR StoreServ File Controller remotely, discover the HPE 3PAR StoreServ File Controller in the OpsMgr.

NOTE:

Ensure the following:

- HPE 3PAR StoreServ File Controller and the OpsMgr server are on the same domain
- Ensure HPE 3PAR StoreServ File Controller System is managed by the OpsMgr Agent installed on the managed device during the discovery process. To discover HPE 3PAR StoreServ File Controller in the domain of the management server, follow the procedure described in **Discovering HPE StoreEasy 1000 and HPE StoreEasy 3000 storage**.

Getting WMI Events from HPE 3PAR StoreServ File Controller

To view HPE 3PAR StoreServ File Controller events on OpsMgr console, ensure that the WMI service is running. For more information on the HPE 3PAR StoreServ File Controller see **https://www.hpe.com/us/en/product-catalog/storage/file-storage.hits-12.html**.

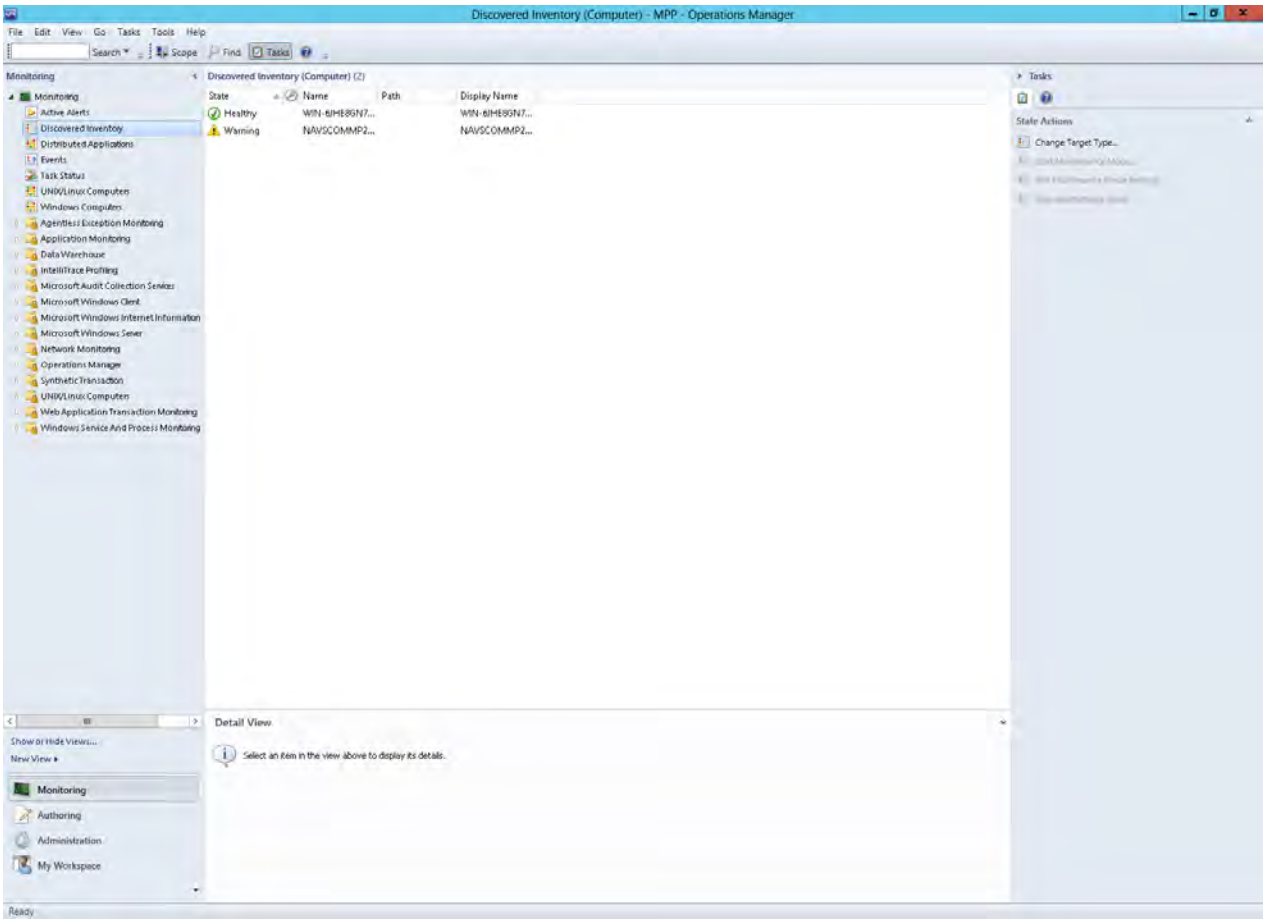
Using the Management Pack software

View Discovered Inventory

After the HPE Storage Management Pack is imported, on running the discovery wizard the discovered computers get classified into various HPE Storage Computer Groups. Complete the following steps to view discovered HPE Storage Computer Groups:

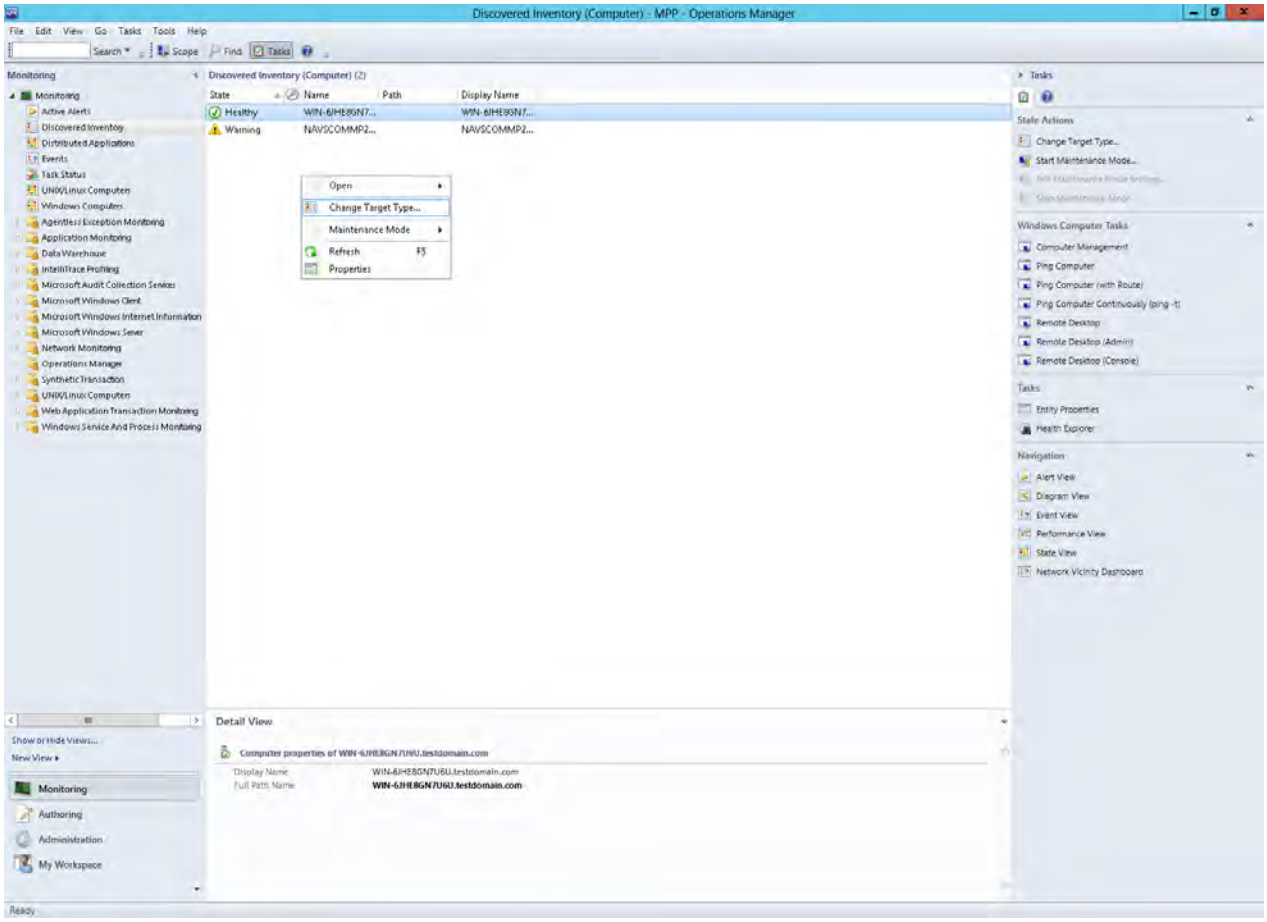
Procedure

1. Click the **Monitoring** pane.
2. Click **Discovered Inventory**.

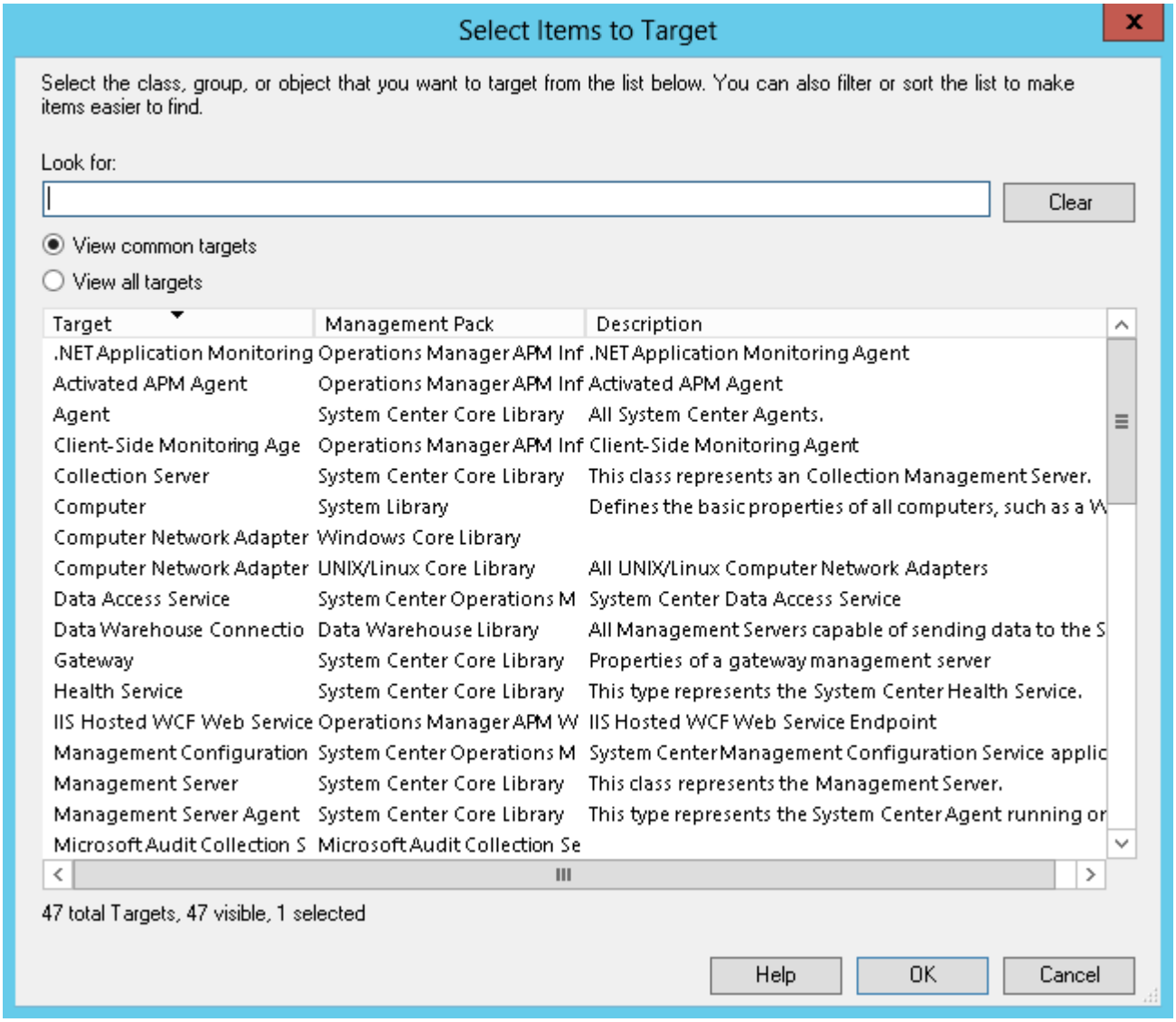


3. Click **Actions** from the toolbar. The Actions console appears.

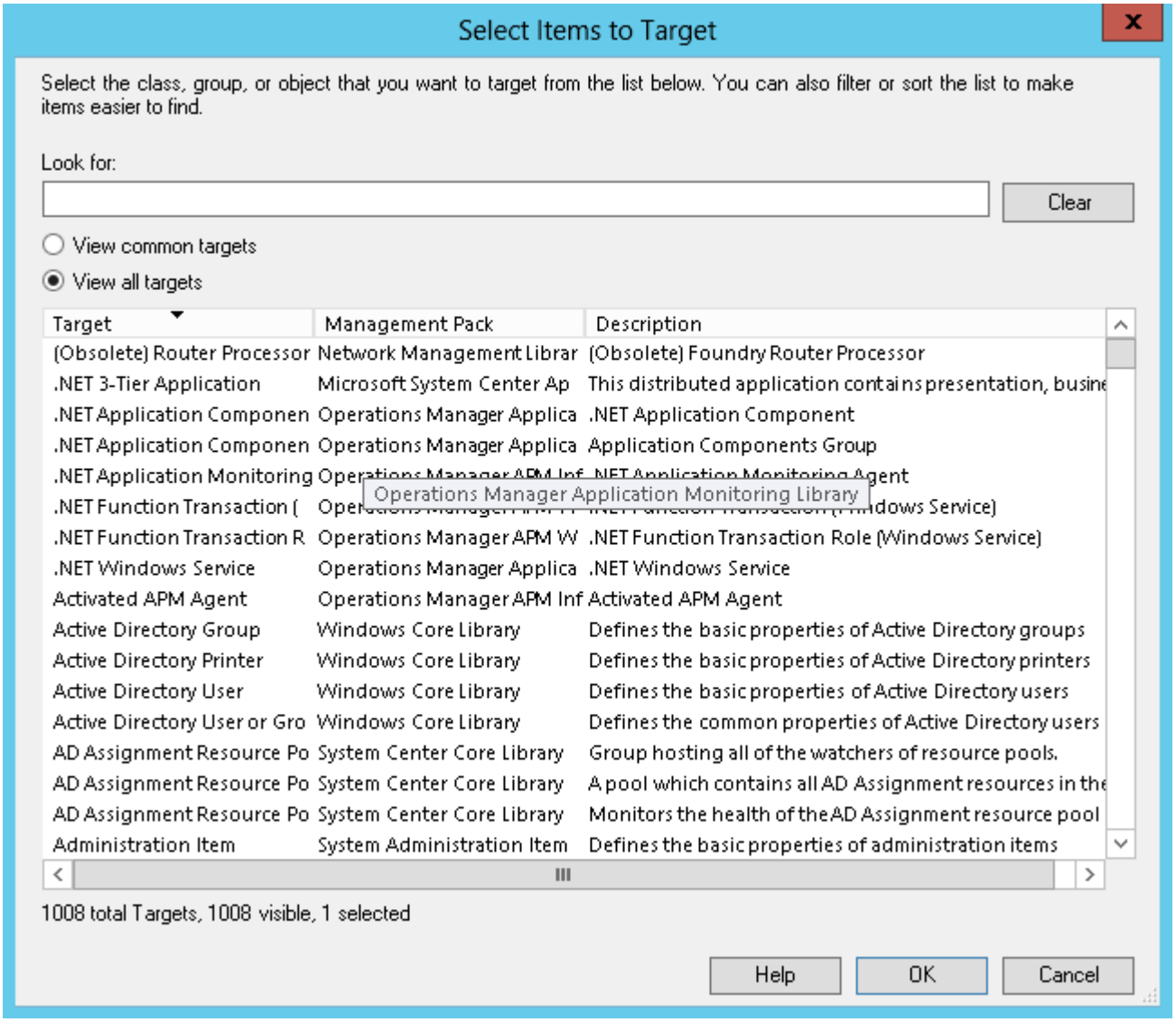
   Click the **Change Target Type** option from the **Actions** console.



4. The **Select a Target Type** window appears.



5. Click **View all targets** option.



6. To view computers in other HPE Storage computer groups select the following Target Types in Step 6:
   - HPE 3PAR StoreServ SNMP Trap Catcher
   - HPE StoreVirtual SNMP Trap Catcher
   - HPE StoreOnce SNMP Trap Catcher
   - HPE StoreEver Tape Library SNMP Trap Catcher
   - HPE XP 9000 SNMP Trap Catcher
   - HPE MSA SNMP Trap Catcher
   - HPE StoreEasy 1000 and 3000 Storage WMI Event Discovery
   - HPE Storage SMI-S CIM Servers
   - HPE 3PAR StoreServ File Controller WMI Event Discovery

Disabling Discoveries

Complete the following steps to disable a discovery:

1. Open the **Authoring Console**.
2. Select **Object Discoveries** in the **Authoring** pane.

   The list of discovered objects is displayed in the **Object Discoveries** pane.
3. Find the discovered object in the **Object Discoveries** pane for which you want to disable the rules.

4. Right-click on the discovered object and select **Overrides** > **Override the Rule**.
5. Select the group or computer for which you want to disable the Discovery.
6. Select a specific object for which you want to disable Override Rule and click **OK**.
7. The **Override Properties** dialog box appears.
8. Select the **Enabled** Parameter and change the **Override Value** to **False**.
9. Click **Apply** and verify that the **Effective Value** of the parameter has changed to **False**.
10. Click **OK** to confirm.

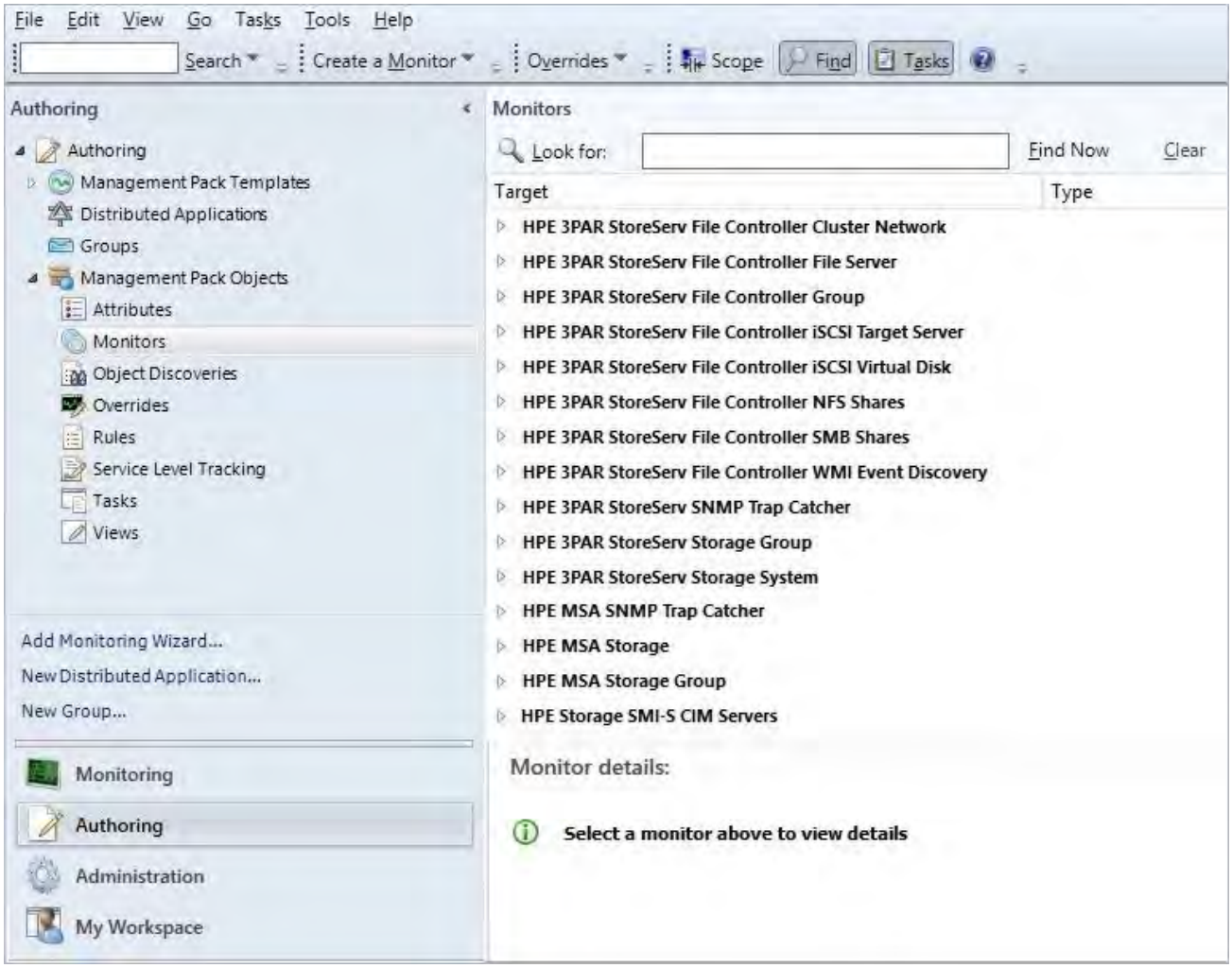
NOTE:

It is recommended to save override settings in a Custom Management Pack instead of the Default Management Pack. This will avoid creating dependency between Default Management Pack and HPE Storage Management Packs.

Monitoring HPE Services Health

Service Health Monitors

The HPE Storage Management Pack installs the following service health monitors:



HPE Storage SMI-S CIM Service Health Monitor

Monitors the SMI-S CIM Service Health. It generates an alert when the service stops. It tries to recover the health by attempting to automatically restart the service. To check the service health changes and recovery details on the Health Explorer, the OpsMgr agent has to be installed on the SMI-S CIM server.

Monitoring console

The OpsMgr **Monitoring** console displays all events and alerts generated by the HPE Storage portfolio. You must perform all user activities for the HPE Storage Management Pack software on the **Monitoring** console.

Event handling

Events are collected automatically from the SNMP Trap Catcher. Depending on the event severity, an alert is generated by event rules only for error, critical error, and warning events.

Events Details tab

The **Events Details** tab, shown in **Figure 2: Events in Operations Manager** on page 87, comprises the following components:

- Event Description—Problem description, corrective action, cause of the problem, and the FRU List.
- Log Name—Name of the log file that helps in monitoring events.
- Event Number—Event number of the event in the log file. (You can edit the numbers)
- Logging Computer—Storage Management Appliance Name or Problem Reporting Node.
- Source—Name of the event.
- User—User who reports this event.
- Time—When the event was generated at reporting node.

Event Parameters

The Event Parameters of the HPE Storage have been set to the following:

- Parameter1—Device Id
- Parameter 2—Device Name
- Parameter 3—Source Computer Name - the computer that generated the event
- Parameter 4—Source Computer Domain Name - the domain of the computer that generated the event

Using OpsMgr Views

HPE Storage

The views present on the HPE Storage folder are:

All events and alerts generated by HPE Storage hardware are shown in **Figure 2: Events in Operations Manager** on page 87. The **Events** view in the HPE Storage folder is a consolidation of events generated by HPE StoreEasy 1000/3000 Storage, HPE MSA Storage, HPE StoreVirtual Storage, HPE StoreEver Tape Libraries, HPE XP 9000 Storage, HPE 3PAR StoreServ Storage, HPE 3PAR StoreServ File Controller, and HPE StoreOnce Backup.

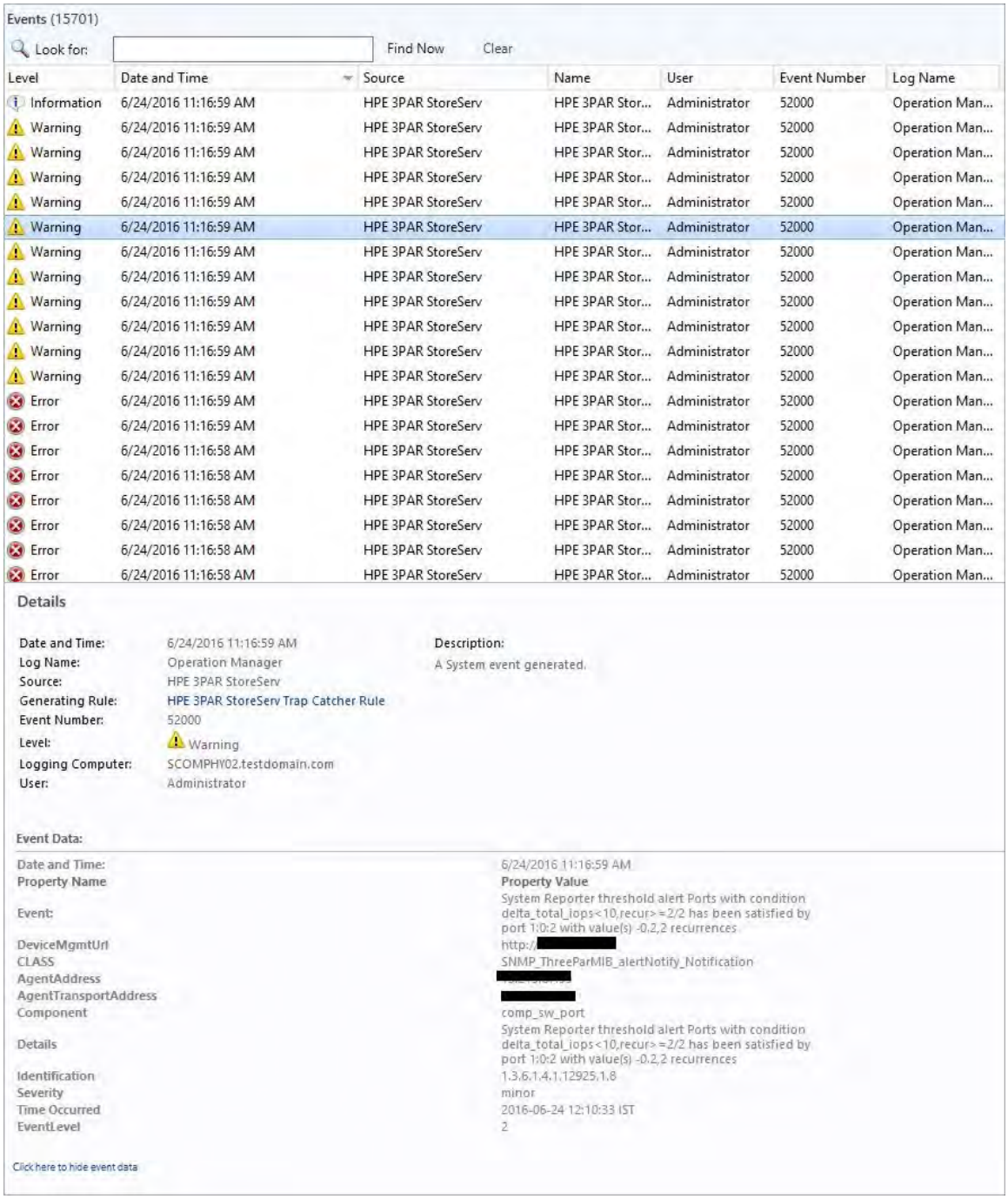


Figure 2: Events in Operations Manager

HPE 3PAR StoreServ Storage warnings and errors

Displays error and warning events from HPE 3PAR StoreServ Storage.

HPE 3PAR StoreServ File Controller

Displays error and warning events from HPE 3PAR StoreServ File Controller.

HPE StoreEver Tape Libraries warnings and errors

Displays error and warning events from HPE StoreEver Tape Libraries.

HPE StoreVirtual Storage System

Displays events from HPE StoreVirtual Storage System.

HPE MSA Storage Arrays

Displays events from HPE G3 MSA Storage.

HPE XP 9000 Storage

Displays error and warning events from P9000 Disk Arrays, including XP 24000 and P9500.

HPE StoreOnce Backup

Displays error and warning events from HPE StoreOnce Backup.

HPE StoreEasy 1000 Storage

Displays events from HPE StoreEasy 1000 system.

HPE StoreEasy 3000 Storage

Displays events from HPE StoreEasy 3000 system.

Alerts

Alert Details tab

Following are the components of the **Alert Details** tab:

- Source—origin of the problem.
- User—the owner of this alert.
- Causes—the cause that triggers or displays the alert.
- Resolution—the proposed fix for the Issue.
- Time—the time when the alert was generated.

The OpsMgr **Alert** window **Details** tab shown in displays problem description, corrective action, cause for the problem, and the FRU list.

Product Knowledge tab

The Product Knowledge tab, shown in **Figure 3: Alert view, Product Knowledge tab** on page 88, provides context-sensitive links to external information sources, including websites and troubleshooting documents.

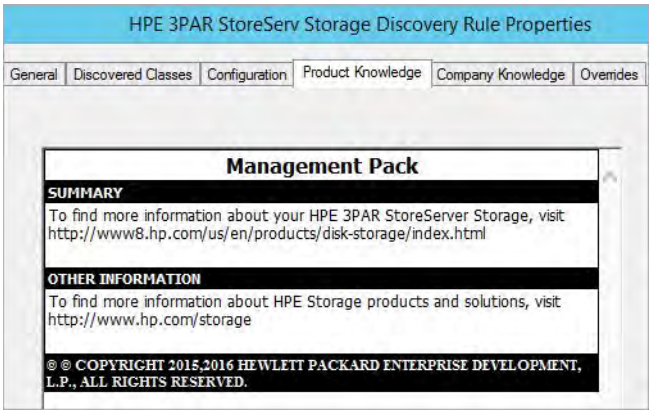


Figure 3: Alert view, Product Knowledge tab

Alerts and views

Displays alerts generated by HPE Storage Management Pack. Select **Alerts** in the **HPE Storage** folder on the left pane of the OpsMgr operator console. The right pane displays all alerts generated by the particular storage hardware. The alert view has a folder for each HPE Enterprise Storage platform, as follows:

HPE Storage

Displays alerts generated by HPE Storage hardware. The view is a consolidation of alerts generated by HPE 3PAR StoreServ Storage, HPE StoreEasy 1000/3000 Storage, HPE 3PAR StoreServ File Controller, HPE StoreEver Tape Libraries, HPE StoreOnce Backup, HPE MSA Storage, HPE StoreVirtual Storage, and HPE XP 9000 Storage.

HPE StoreEver Tape Libraries warnings and errors

Displays warning and error alerts generated by HPE StoreEver Tape Libraries.

HPE 3PAR StoreServ Storage warnings and errors

Displays warning and error alerts generated by HPE 3PAR StoreServ Storage.

HPE StoreVirtual Storage warnings and errors

Displays warning and error alerts generated by HPE StoreVirtual Storage.

HPE MSA Storage Array warnings and errors

Displays warning, critical, and error alerts generated by HPE MSA Storage.

HPE XP 9000 Storage warnings and errors

Displays warning, critical, and error alerts generated by HPE XP 24000 and P9500 Storage Arrays.

HPE StoreOnce Backup warnings and errors

HPE StoreOnce Backup warnings and errors.

HPE StoreEasy 1000 Storage

Displays warning and error alerts from HPE StoreEasy 1000 system.

HPE StoreEasy 3000 Storage

Displays warning and error alerts from HPE StoreEasy 3000 system.

HPE 3PAR StoreServ File Controller

Displays warning and error alerts from HPE 3PAR StoreServ File Controller.

Using HPE Storage Management Pack PowerShell Cmdlets

From version 4.2, HPE Storage Management Pack contains PowerShell Cmdlets that can be used to automate the management pack related tasks. You can perform the following tasks by using these PowerShell Cmdlets:

- Configuring rules
- Getting events and alerts
- Getting diagram view information

Prerequisites

PowerShell Cmdlets are supported from SCOM 2012 and later versions. There are no additional pre-requisites for using PowerShell Cmdlets. Pre-requisites such as SNMP or SNMP trap services that are required for the normal Management Pack operations are applicable here.

Using HPE Storage Management Pack PowerShell Cmdlets

Perform the following steps to use HPE Storage Management Pack PowerShell Cmdlets:

Procedure

1. Open the PowerShell command line interface.
2. Import the HPE Storage Management Pack module by using the following command:

   ```
   Import-Module HPStorageMP
   ```
3. Run the PowerShell Cmdlets.

   For example, run the following command to enable the event rule for HPE 3PAR StoreServ Storage:

   ```
   Enable-HPStorageMPEventRule -ManagementServer "<PrimaryManagmentServername>" -
   DeviceType "HPE 3PAR StoreServ" -targetsystem "<Host Name>" -CustomMP Custom
   ```

List of PowerShell Cmdlets for HPE Storage Management Pack

The following PowerShell Cmdlets can be used to configure and get the alerts and diagram view information from the HPE Storage Management Pack:

Cmdlets Name	Purpose
Enable-HPStorageMPEventRule	Enable the rule related to event for specific storage system.
Disable-HPStorageMPEventRule	Disable the rule related to event for specific storage system.
Enable-HPStorageMPDiscoveryRule	Enable the rule related to diagram specific storage system.
Disable-HPStorageMPDiscoveryRule	Disable the rule related to diagram specific storage system.

Table Continued

Cmdlets Name	Purpose
Show-HPStorageMPEventRuleSummary	Display the override summary of the rule to events.
Show-HPStorageMPDiscoveryRuleSummary	Display the override summary of the rule to diagram view.
Remove-HPStorageManagementPack	Delete the specific Management pack from SCOM
Show-HPStorageMPAllEvents	Display all the HPE Storage events created in SCOM.
Show-HPStorageMPEvents	Display the specific HPE Storage events based on severity and device type.
Show-HPStorageMPAllAlerts	Display all the HPE Storage alerts created in SCOM.
Show-HPStorageMPAlerts	Display the specific HPE Storage alerts based on severity and device type.
Modify-HPStorageMPDiscoveryRule	Modify the override value of rule related to diagram view.
Export-HPStorageMPAlerts	Export all the HPE Storage alerts to CSV file (`HPEStorageMPAlerts.csv`) and stored at install directory path.
Export-HPStorageMPEvents	Export all the HPE Storage events to CSV file (`HPEStorageEvents.csv`) and stored at install directory path.
Show-HPStorageMPDiagramView	Display instance of diagram of specific storage type.
Export-HPStorageMPDiagramView	Export all the HPE Storage diagram view instances to CSV file (`HPEStorageDiagramView.csv`) and stored at install directory path.
Connect-HPStorageMPManagementServer	Verify and connect to the management server.
Add-HPStorage	Discover the HPE Storage system for the diagram view.For configuring HPE 3PAR StoreServ Storage for Capacity Dashboard and Virtual Machines, use **Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool**.
Remove-HPStorage	Remove the HPE Storage system that is discovered for the diagram view.For removing HPE 3PAR StoreServ Storage for Capacity Dashboard and Virtual Machines, use **Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool**.

Table Continued

Cmdlets Name	Purpose
Modify-HPStorage	Modify the credentials or IP of HPE Storage system for the diagram view. For modifying HPE 3PAR StoreServ Storage for Capacity Dashboard and Virtual Machines, use **Discovery of HPE Storage devices using HPE Storage Management Pack User Configuration Tool**.
Modify-HPStorageManagementServer	Modify the IP of the SCOM management server.

Use the following command to know the syntax of each cmdlet:

```
Get-Help <cmdlet-name>
```

For example, use `Get-Help Add-HPStorage` to know the syntax of Add-HPStorage cmdlet.

Frequently Asked Questions

HPE Systems Insight Manager

Q1. How does HPE SIM compare to OpsMgr and why should I use both?

A1. OpsMgr and HPE SIM are complementary management tools.

HPE SIM provides hardware resource life cycle management for HPE servers, clients, printers, and other standards-based devices. It combines and displays:

- in-depth health and configuration information
- group management
- version control for HPE system software
- remote administration through HPE Lights-Out management processors

This extensive application along with HPE Essentials value-added software can also provide advanced hardware performance, administration and vulnerability management.

Within an IT infrastructure, HPE SIM and the HPE Essentials Value Packs are for organizations that are responsible for proper configuration, timely update, security, and health of hardware resources.

OpsMgr delivers comprehensive monitoring, performance management and analysis tools to maintain Windows operating systems and application platforms. Microsoft relies on industry partners like HPE and others to provide additional hardware and software management solutions. This will further extend OpsMgr to meet the needs of customers' enterprise environments. Implementing both OpsMgr and HPE SIM provides well-integrated and complementary benefits, which help to manage adaptive enterprise environments.

Platform Support

Q1. What hardware platforms is supported by the new HPE Storage Management Pack for System Center?

A1. The HPE Storage Management Packs for System Center supports:

Storage System	Supported Firmware
HPE 3PAR StoreServ Storage • StoreServ 8000 • StoreServ 20000 • StoreServ 7000 • StoreServ 10000 • StoreServ 9450 • StoreServ 20800 R2/20840 R2/20850 R2	For 3PAR 8000 & 20000 systems, minimum IOS v. 3.2.2 or later. For 3PAR 7000 & 10000 systems, IOS v.3.2.1 or later. For 3PAR StoreServ Storage 9450 & 20800 Systems, IOS v3.3.1 or later
HPE 3PAR StoreVirtual Storage • StoreVirtual VSA • StoreVirtual 3200 • StoreVirtual 4000	For StoreVirtual 3200 systems: LHN OS 13.0,13.1 & 13.5. For StoreVirtual 4000 and VSA, LHN OS v. 12.5, v.12.6 & v12.7.

Table Continued

Storage System	Supported Firmware
HPE StoreOnce Backup • StoreOnce 6600 • StoreOnce 6500 • StoreOnce B6200 • StoreOnce 5500/5100 • StoreOnce 4900/4700/4500 • StoreOnce 4400/4200 • StoreOnce 3500/3100 • StoreOnce VSA	For StoreOnce 6600, v3.14 onwards. For StoreOnce 6500, v3.12.2 onwards. For StoreOnce B6200, V3.11.7 onwards. For StoreOnce 5500/5100, v3.14.1 onwards. For StoreOnce 4900/4700/4500, v3.12.2 onwards. For StoreOnce 4400/4200, v3.11.7 onwards. For StoreOnce 3500/3100, v3.14.1 onwards. For StoreOnce VSA, v3.13.5 onwards.
HPE MSA Storage • MSA 2050 • MSA 2042 • MSA 2040 • MSA 1040	For MSA 2050, vVL100R004 or later. For MSA 2042, v.GL220P008 or later. For MSA 2040 & 1040, v.GL210 and later.
HPE StoreEasy Storage • StoreEasy 1000 • StoreEasy 3000	For Gen 9 based platforms, WMI Provider v. 10.30.0.0.For Gen 8 based platforms, WMI Provider v.9.5.0.0.
HPE StoreEver Tape Library	ESL G3 & MSL Series
HPE XP Storage • XP7 • XP24000 • HPE P9000	For XP7, v.80-03-02-00/00 and later. For P9000, v. 70-06-01-00/00 and later. For XP 24000, v. 60-08-02-00/00 and later.
HPE 3PAR StoreServ File Controller V2 & V3	For Gen 9 based platforms, WMI Provider v. 10.30.0.0For Gen 8 based platforms, WMI Provider v.9.5.0.0

Q2. Why are the HPE informational events showing up as alerts under OpsMgr?

A2. The HPE Storage Management Pack for System Center only generates alerts in OpsMgr for critical and warning states. Check the events view for a complete list and events.

Known Behavior

- Unable to collect SNMP traps from HPE Storage Management Pack for System Center.Microsoft has implemented a workaround from OpsMgr to move the SNMP trap collection server to a separate Management server which is not a part of Network Resource Pool/Discovery Server. This will allow the SNMP Trap service to listen on port 162 and collect traps.
- If the Management Server is a part of the Network Resource Pool/Discovery Server, then the 162 port is utilized by SCOM instead of the SNMP trap, therefore alerts are not captured. HPE recommends, a collection point server in order to receive alerts.
- For the Diagram view of HPE MSA, unknown state is unavailable in Microsoft SCOM, thus it is interpreted as OK.

- To discover HPE MSA Storage, please add only one controller IP in the User Configuration Tool. If both the controller IPs are added, then diagram view will show the Storage system IP as the second IP controller (which ever is added later).
- The health of HPE StoreVirtual Storage VSA model displays a warning for the network component in OpsMgr console. However, the HPE StoreVirtual Centralized Management Console shows healthy.
- Monitoring HPE Storage diagram view is not supported from the OpsMgr Gateway server.
- Network Resource Pools are available in SCOM 2012.
- To display status of the nodes in the SCOM Console, ensure the managers are running on all the HPE Store Virtual Nodes in the Centralized Management Console.
- A new feature in System Center 2012 – Operations Manager is the resource pool. A resource pool is a collection of management servers used to distribute work amongst themselves and take over work from a failed member.You can use resource pools for:
  - Monitoring network devices.
  - Monitoring UNIX and Linux computers.
  - Create Resource Pool: **http://technet.microsoft.com/en-us/library/hh230706.aspx**

Troubleshooting

Installer

Q1. The HPE Storage Management Pack for System Center kit fails with error “The scripts required for this install to complete could not be run”.

A1. Please install the SNMP Service on the OpsMgr Server before installing the HPE Storage Management Pack for System Center. The installation program runs a script which requires the smi2smir tool to register SNMP MIBS related to HPE Storage devices. The smi2smir tool can be located in the `~SYSTEM32\wbem\snmp` directory for a 32-bit operating system and `~SysWOW64\wbem\snmp` directory for a 64-bit operating system. Tool gets installed when you install SNMP on Windows servers.

Q2. I have installed the HPE Storage Management Pack for System Center v4.5 for OpsMgr; however I have deleted the management pack imported during installation manually. Can repair option of installer re-import the management pack?

A2. Yes, the repair option of the installer will re-import the management pack selected during the installation. The repair option will also re-install the install directory files, registry path, and mibs.

Q3. Repair of HPE Storage Management Pack does not start the web-service.

A3. The repair option does not automatically restart the web services. Perform the following steps to start the services manually:

1. Navigate to **Start** > **Run**.
2. In the Run dialog enter `services.msc` and click **Enter** to list all services.
3. Select the **HPE Storage Management Pack Server** and start the service.

Q4. Repair of HPE Storage Management Pack is not creating ConfigFile.xml and CapacityConfigFile.xml.

A4.To create these XML files, launch the User Configuration Tool and connect to the Management Server.

Q5. In case of a failed or incomplete uninstallation, how do I delete files and registry entries?

A5. In case of a failed or incomplete uninstallation, follow the steps in the procedure:

Procedure

1. Open command prompt and type the command `sc delete "SCOMMPServer”`. This deletes the `HPE Storage Management Pack Server` service.
2. Delete the `HPE Storage Management Pack for System Center` registry entry.

NOTE:

The registry entries for the 32 and 64 bit systems are available at **HKEY_LOCAL_MACHINE \SOFTWARE\Hewlett-Packard** and **HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node \Hewlett-Packard** respectively.

3. Delete the `HPE Storage Management Pack for System Center` folder and its contents.

   NOTE:

   The installed files for the 32-bit Operating System are available at:

   ~:\Program Files\HPE\HPE Storage management Pack

   and for 64–bit at

   ~:\Program Files(x86)\HPE\HPE Storage management Pack

   for System Center directory.

4. Navigate to **Control Panel** > **All Control Panel Items** > **Programs and Features** and remove the application.

SNMP

Q1. I am not able to see anything after creating the View with target as SNMP Trap Catcher Discovery.

A1. Check if the **SNMP Trap Catcher Rule** in the authoring pane is disabled. If it is disabled, enable the rule.

Q2. I have created the view with Object as SNMP Trap Catcher Discovery in the OpsMgr console. I could see some Events\Alerts from the monitoring device but not in readable format.

A2. If you are using the Microsoft Windows Server 32 bit, open the command prompt and navigate to this folder: `../windows/system32/wbem/snmp`.

If you are using Microsoft Windows Server 64 bit, open the command prompt and navigate to this folder:`../windows/SysWOW64/wbem/snmp`.

Run the command `smi2smir/l` to get a list of `.mib` files registered in WMI. If you are not able to find `.mib` files registered, reinstall the HPE Storage Management Pack and also check if the installed management pack kit supports the installed version of the Windows operating system.

Diagram View

Q1. I have discovered the HPE Storage device using the HPE Storage Management Pack User Configuration tool. I have enabled the discovery rule, and diagram view is also displayed. Now, I have disabled the discovery rule. Why is the diagram view still displayed?

A1. The disabling of the discovery rule will not remove the diagram view instance from OpsMgr console, however the instance of diagram view will not be refreshed. To remove the instance of storage device, delete the entry from the HPE Storage Management Pack User Configuration tool and wait for the diagram view to refresh before you disable the discovery rule.

Q2. After installation of the HPE MSA Storage Management Pack for System Center v4.5, the volumes listed under MSA diagram view displays health status as warning whereas, the MSA GUI shows them as normal?

A2. To resolve this issue, upgrade the MSA firmware to GL210B007 or above.

Q3. After discovery of the HPE Storage Device, I see Undiscovered Storage System.

A3. If a storage device is unreachable, then the following status is displayed Undiscovered Storage. The storage system and its health state is not displayed.

Q4. In the diagram view, the sub groups of the storage system are displayed by default. This is not the case with HPE Storage Management Pack for System Center 4.2.

A4. From HPE Storage Management Pack for System Center 4.3, the diagram view shows three levels by default and hence the sub components are also shown in the diagram view by default since they form the third level in the hierarchy of diagram view.

Collection Point Server

Q1. I have installed the HPE Storage Management Pack for System Center 4.4 on collection point server. Why am I getting an error while connecting to the OpsMgr server using HPE Storage User Configuration tool.

A1. By default, the domain firewall is enabled on the collection point and the OpsMgr server. Ensure that the firewall on the collection point and the OpsMgr server is disabled and then try connecting to the OpsMgr server using HPE Storage User Configuration tool.

Dashboards

Q1. I am unable to view the Health Dashboard.

A1. This occurs when the GUI controls are not loaded due to cached data in OpsMgr. To resolve this issue, perform the following steps:

1. In the CMD prompt, enter `<OpsMgr Installed directory>\Console`. For SCOM 2012 R2, navigate to the following the installed directory: c:\Program Files\Microsoft System Center 2012 R2\Operations Manager.
2. Run `Microsoft.EnterpriseManagement.Monitoring.Console.exe/clearcache`.

Q2. I am getting the following error message: `CapacityConfigFile.xml file is missing from the Install directory`.

A2: To resolve this issue, perform the following:

1. In the User Configuration Tool, connect to the Management server.
2. The Capacity Config file is created.

Q3. I get the following error message: `Web-services not running`.

A3. To resolve the error, perform the following:

1. Navigate to **Start** > **Run**.
2. In the services window, enter `services.msc`.You will get a list of services.
3. Select the service **HPE Storage Management Pack Server** and start the service.

Q4. I am unable to view the graph and I get the following message: `Insufficient data points to display the graph (minimum 2 data points required).`

A4: To, display a line graph hourly, daily, and monthly at least two data points are required. The polling of the data points starts one hour after installation. For a newly configured storage system or CPGs/Virtual Volumes, the graphs display after 2 hours from the time of configuration or creation. It is recommended to use hourly/ daily graph until daily/monthly graph is available.

Q5. I have configured HPE 3PAR StoreServ Storage and created CPG or volumes. After, three hours the graph is displayed but the capacity changes are not reflecting.

A5: The capacity changes are displayed after the next polling cycle (within an hour).

Q6. I have upgraded HPE Storage Management Pack for System Center v4.5, however HPE 3PAR StoreServ Storage discovered is not displayed in the Capacity dashboard.

A6. If the HPE Storage Management Pack was upgraded v4.5, modify the HPE 3PAR Storage discovered with same credentials using the HPE Storage Management Pack User Configuration Tool and reconfigure HPE Storage Management Server services.

Q7. I am unable to view Capacity Dashboard for one or more of the configured HPE 3PAR StoreServ Storages.

A7. Check if the ArrayId is available in CapacityConfigFile.xml file, in the installation directory of HPE Storage Management Pack. If ArrayId is not available in the xml file, the SSH connection to HPE 3PAR Storage is not established. Ensure that the connectivity for HPE 3PAR SSH port 22 is available from OpsMgr Management Server or from the Collection Point Server.

Devices

HPE 3PAR StoreServ

Q1. I am not able to see anything after creating the View with target as **HPE 3PAR StoreServ SNMP Trap Catcher Rule** and **HPE 3PAR StoreServ Storage Discovery Rule**.

A1. Check if the **HPE 3PAR StoreServ SNMP Trap Catcher Rule** and **HPE 3PAR StoreServ Storage Discovery Rule** in the authoring pane are disabled. If they are disabled, enable the rules.

Q2. I have created the view with Object as **HPE 3PAR StoreServ SNMP Trap Catcher Rule** and **HPE 3PAR StoreServ Storage Discovery Rule** in the OpsMgr console. I could see some Events\Alerts from the monitoring device but not in readable format.

A2. If you are using the Microsoft Windows Server 32–bit, open the command prompt and navigate to this folder: `../windows/system32/wbem/snmp`.

If you are using Microsoft Windows Server 64–bit, open the command prompt and navigate to this folder: `../windows/SysWOW64/wbem/snmp`.

Run the command `smi2smir/l` to get a list of `.mib` files registered in WMI. If you are not able to find `.mib` files registered, reinstall the HPE Storage Management Pack and also check if the installed management pack kit supports the installed version of the Windows operating system.

Q3. I have installed the HPE 3PAR StoreServ Storage Management Pack for System Center v4.4 for OpsMgr 2012 R2 and enabled **SNMP Trap Catcher Rule** on OpsMgr server. Why am I not able to receive any 3PAR traps?

A3. Before enabling the trap catcher ensure that the traps reach the OpsMgr server. If the OpsMgr server is part of the network resource pool, the windows SNMP trap service is disabled due to which the traps will not be received on OpsMgr server. Hence, ensure that the OpsMgr server is not part of the network resource pool, which is an OpsMgr known limitation. See the link to know more about OpsMgr 2012 limitation **http://technet.microsoft.com/en-us/library/jj656656.aspx.**

This behavior is applicable to other storage device SNMP traps not only for HPE 3PAR StoreServ Storage.

Q4. I have installed the HPE 3PAR StoreServ Storage Management Pack for System Center v4.4 for OpsMgr 2012 R2, discovered the HPE 3PAR in User Configuration tool and also enabled discovery rule. Diagram view is displayed in the 3PAR StoreServ diagram view folder. Why is the health state of HPE 3PAR StoreServ Storage group not stable?

A4. This is one of the know limitation of OpsMgr 2012 and OpsMgr 2012 R2. The group state becomes stable after few seconds interval of time.

NOTE:

This behavior is applicable to other storage device diagram view supported not only for HPE 3PAR StoreServ Storage.

Q5. I have installed the HPE 3PAR StoreServ Storage Management Pack for System Center v4.0 or later and enabled SNMP Trap Catcher Rule on OpsMgr server. Why am I not able to receive any 3PAR traps and a warning event with ID 10353 is continuously generated?

A5. Before enabling the trap catcher, ensure that the SNMP Trap services are running target server where SNMP Trap Catcher Rule is enabled.

HPE MSA

Q1. Why is MSA Storage System (or any other storage System state for that matter), shown as degraded, when it has logical failures but no physical failures?

A1. Since Health State of MSA Storage is dependent on both Logical and Physical components failures, the state of MSA is shown as degraded.

This is an expected behavior in every Storage System Management Pack with the diagram view. Storage system health state is directly fetched from the device that shows overall health state including physical and logical failures. For sub-components, only physical components are modelled.

In case of a logical error, that is, when there is no physical error, health state of Storage system may differ from the collective health state of the sub-components.

Q2. Do we need to add the IPs of both the MSA controllers through the User Configuration tool? What is the impact if we do so?

A2. To discover MSA Storage, add only one controller IP in the User Configuration tool. If both controller IPs are added, there is no impact on functionality. However, the diagram view will show the storage system IP as the IP of the second controller, whichever is added later.

Q3. I have installed the HPE 3PAR StoreServ Storage Management Pack for System Center v4.0 or later and port 8080 is closed. Is there any issue with Web Service Communication?

A3. If the SCOM management server is not opened port 8080 with the collection point will never be able to communicate with the web service on the SCOM management server. So Port 8080 should be opened.

HPE StoreEver Tape Library

Q1. I am not able to see some events from the HPE StoreEver Tape Libraries in the `HPE StoreEver Tape Libraries` folder.

A1. It is an expected behavior. Open the `HPE Storage` folder to see all the events from HPE StoreEver Tape Library. These events come with source as "0".

Alerts

HPE 3PAR StoreServ alerts are not displayed in the SCOM console

To resolve this issue, perform the following:

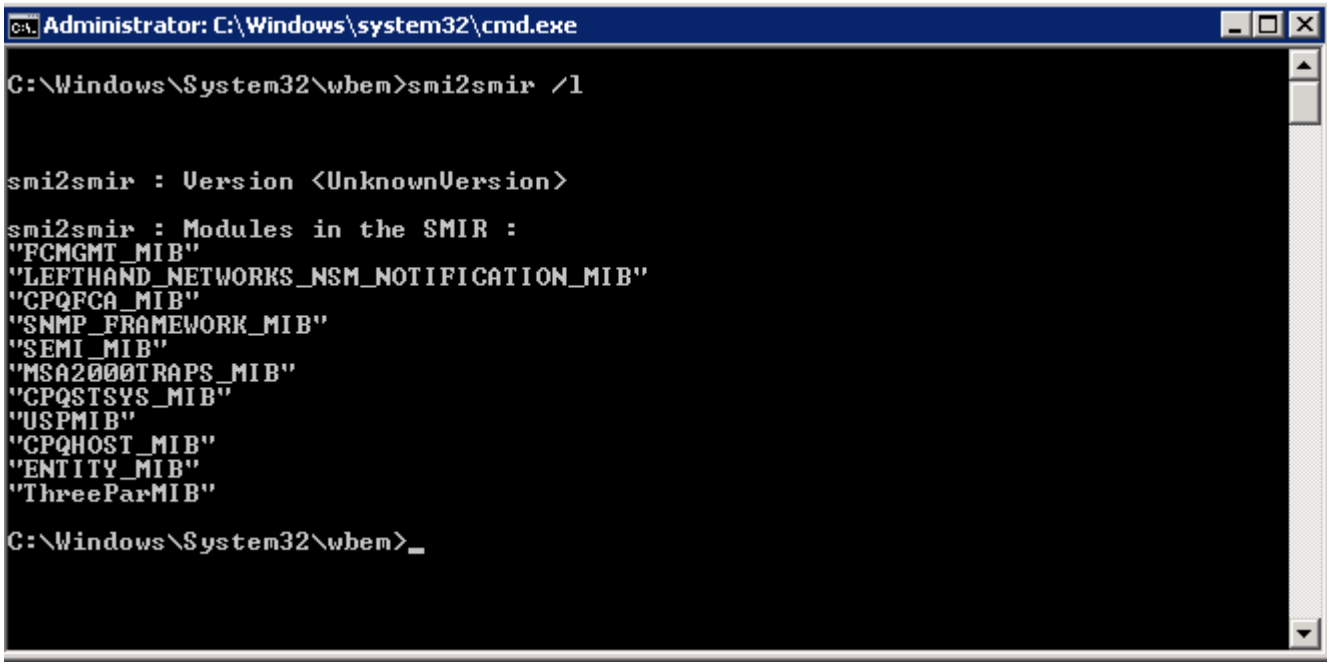
Verify Management Pack installation and configurations

Procedure

1. To verify if the HPE 3PAR StoreServ MIBs are registered, in the command prompt enter the following:

   `C:/windows/system32/wbem/ and run "SMI2SMIR.exe /l`

   Verify if `ThreeParMIB` is listed.



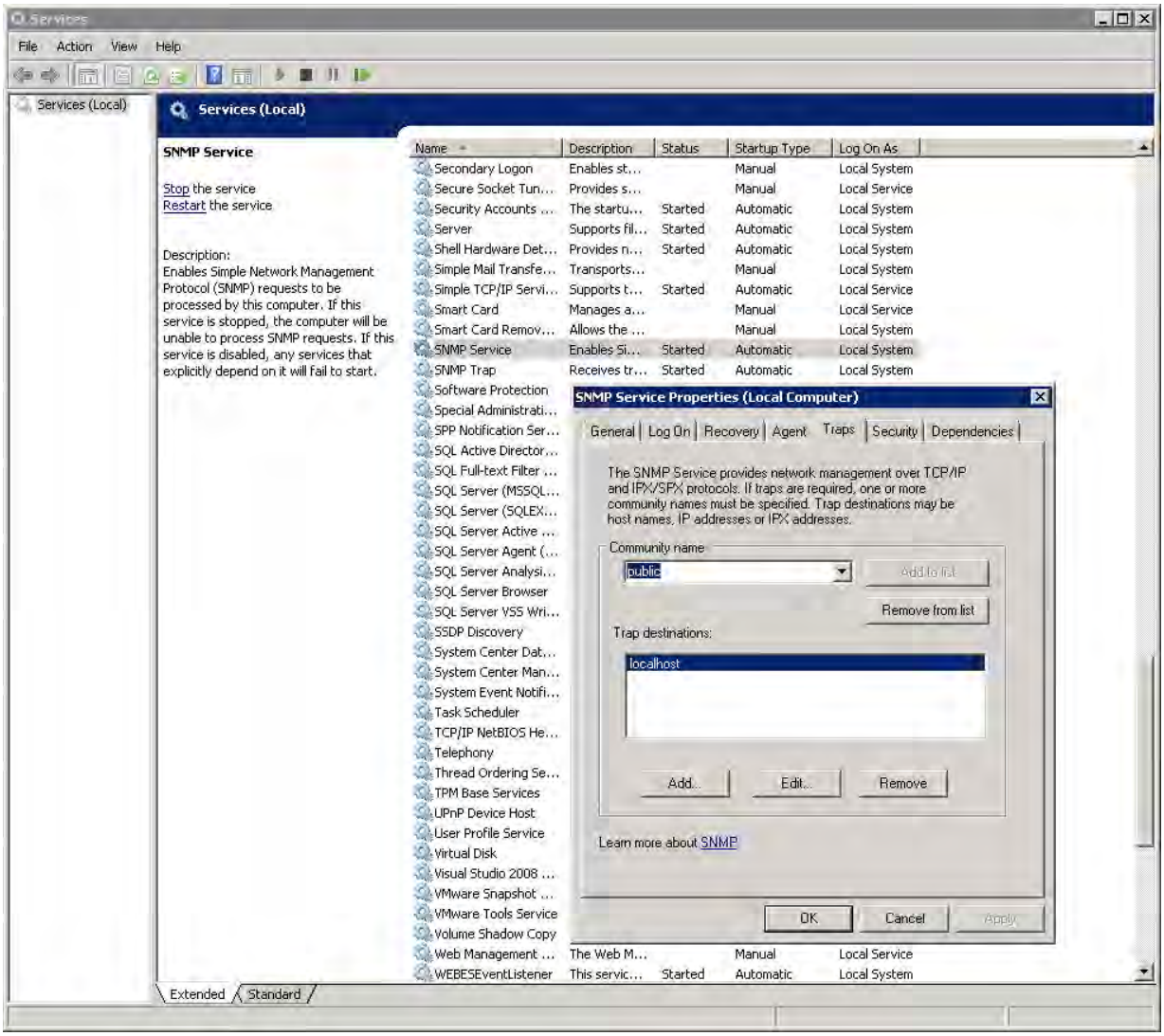
2. Check if the HPE 3PAR StoreServ Management Pack rules are configured. For more information, see **Configuration to process events and alerts for HPE 3PAR StoreServ Storage** array.
3. Check if the OpsMgr or collection point IP is configured in HPE 3PAR StoreServ. For more information, see **Configure HPE 3PAR StoreServ Storage (device) to send SNMP Traps**.

Dependent services and applications

1. Verify that the port 161/162 on the SCOM Management Server or the system on which you want the alerts to be displayed, is used by snmptrap.exe/snmp.exe. To check the process that is using port 161/162, use the command: netstat -ab. If ports 161/162 are used by Operation Manager, ensure that you have a collection point server to receive events.
2. Verify if the SNMP services are installed and configured.

   To check this, perform the following:

   a. Navigate to **Start** > **Run**, enter `services.msc` and select **Ok**.
   b. Select the **SNMP Service** > **Properties**.
   c. In the **Traps** tab, ensure that the **Community name** is **public** and the **Trap destination** is set as **localhost**.



3. SNMP Trap Service is running

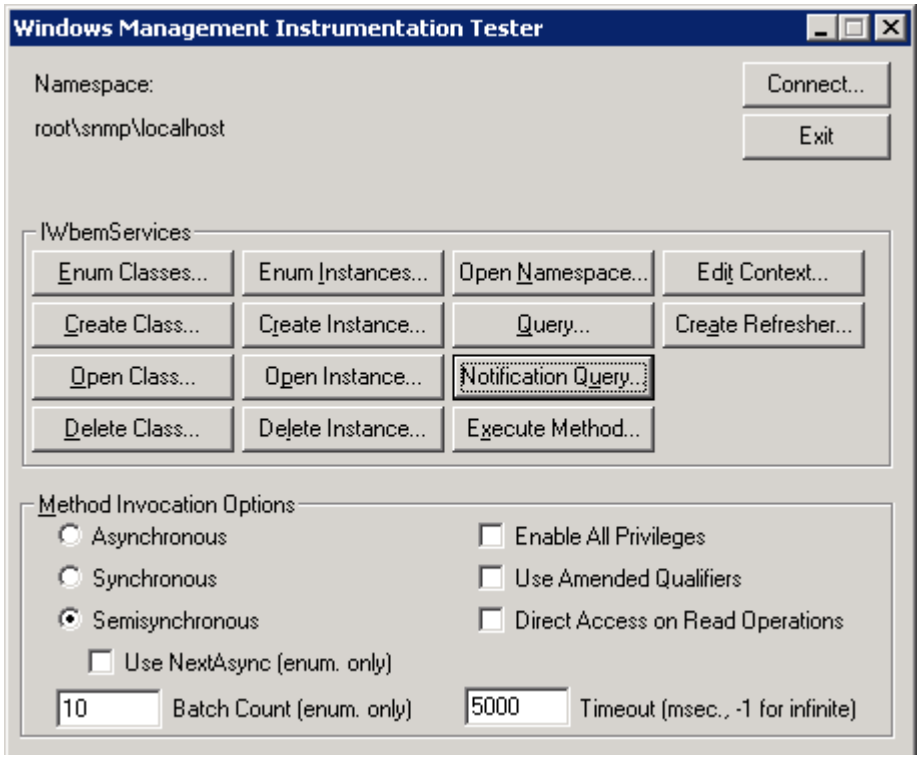
   To ensure SNMP traps are received by the destination after a refresh of the services list or a new installation, you must restart the system.

4. Check the WMI Provider

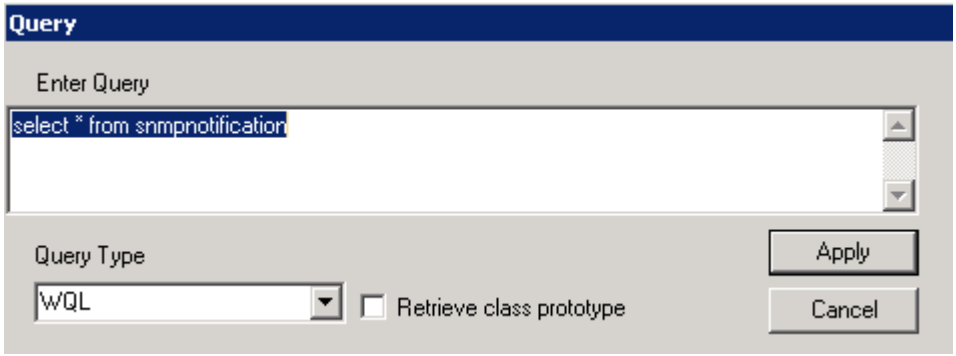
   a. Navigate to `c:/windows/system32/wbem/` and run the **wbemtest.exe**.

   b. Change the Namespace to `root\snmp\localhost` and select **Connect**.

c. Select **Notification Query**.



d. In the **Query** field, enter `select * from SNMPnotification` and select **Apply**.



NOTE:

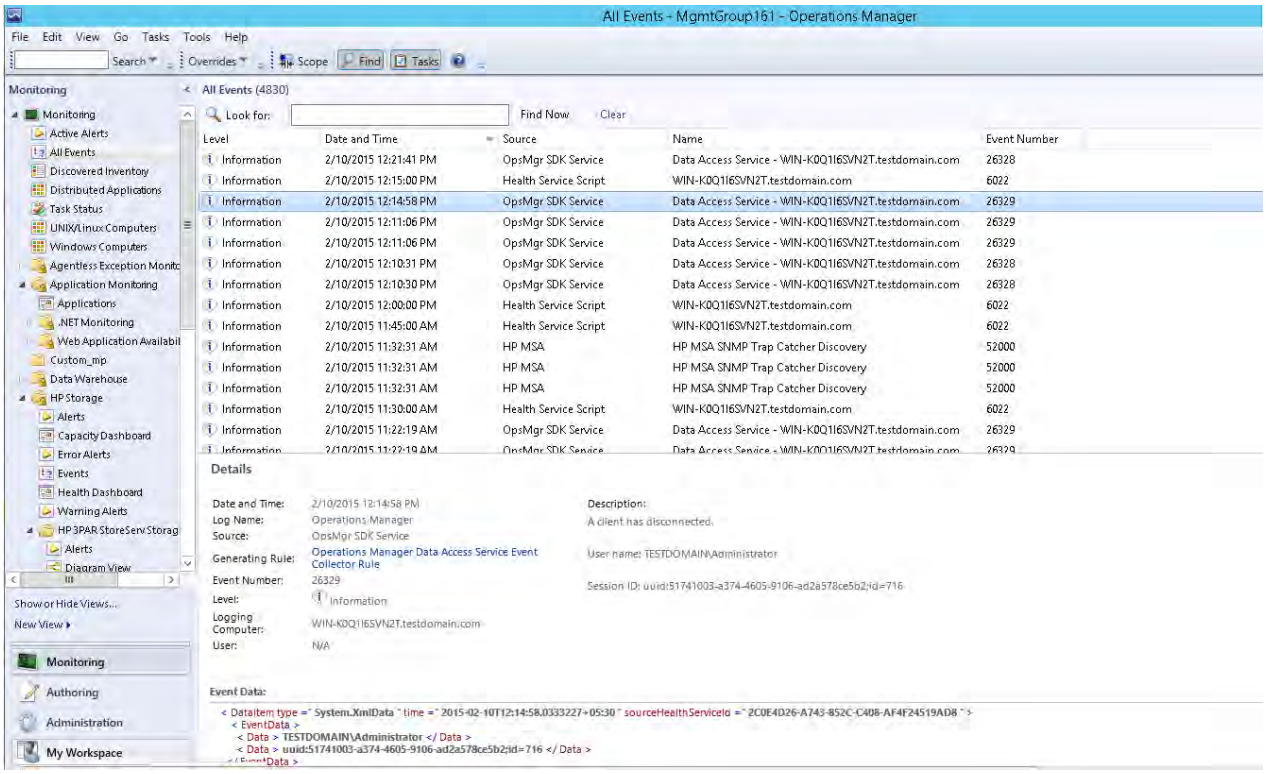
If an error is displayed, reinstall the WMI Provider.

5. Reinstall SNMP servicesTo reinstall the SNMP services, perform the following:
   a. Navigate to **Start** > **Settings** > **Control Panel** > **Add/Remove Programs**.
   b. In the **Add/Remove Windows Components** > **Management and Monitoring Tools**, select **Details**.
   c. Select **Simple Network Management Protocol** and click **Ok**.
   d. Select **Next** to complete installation.
   e. Navigate to **Administrative Tools** > **Computer Management** > **Services and Applications** > **Services**.
   f. Select **SNMP Service**.
6. Ensure a steady database connection

NOTE:

If the SCOM client is unable to connect to the database, then an error is displayed under the **All Events** tab.

If the connection is lost, then the message displayed is: `Data Access Service client is disconnected` and the Event ID displayed is `26329`. If the connection is established, the Event ID displayed is `26328`.



To enable a steady database, perform the following:

a. Select **Start** > **Run**.

b. Enter `regedit` and select **OK**.

c. Select the following registry subkey

`HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control`

d. Navigate to **Control** > **New** and select **DWORD**.

e. In the **New Value** field, enter `ServicesPipeTimeout`, and select **Enter**.

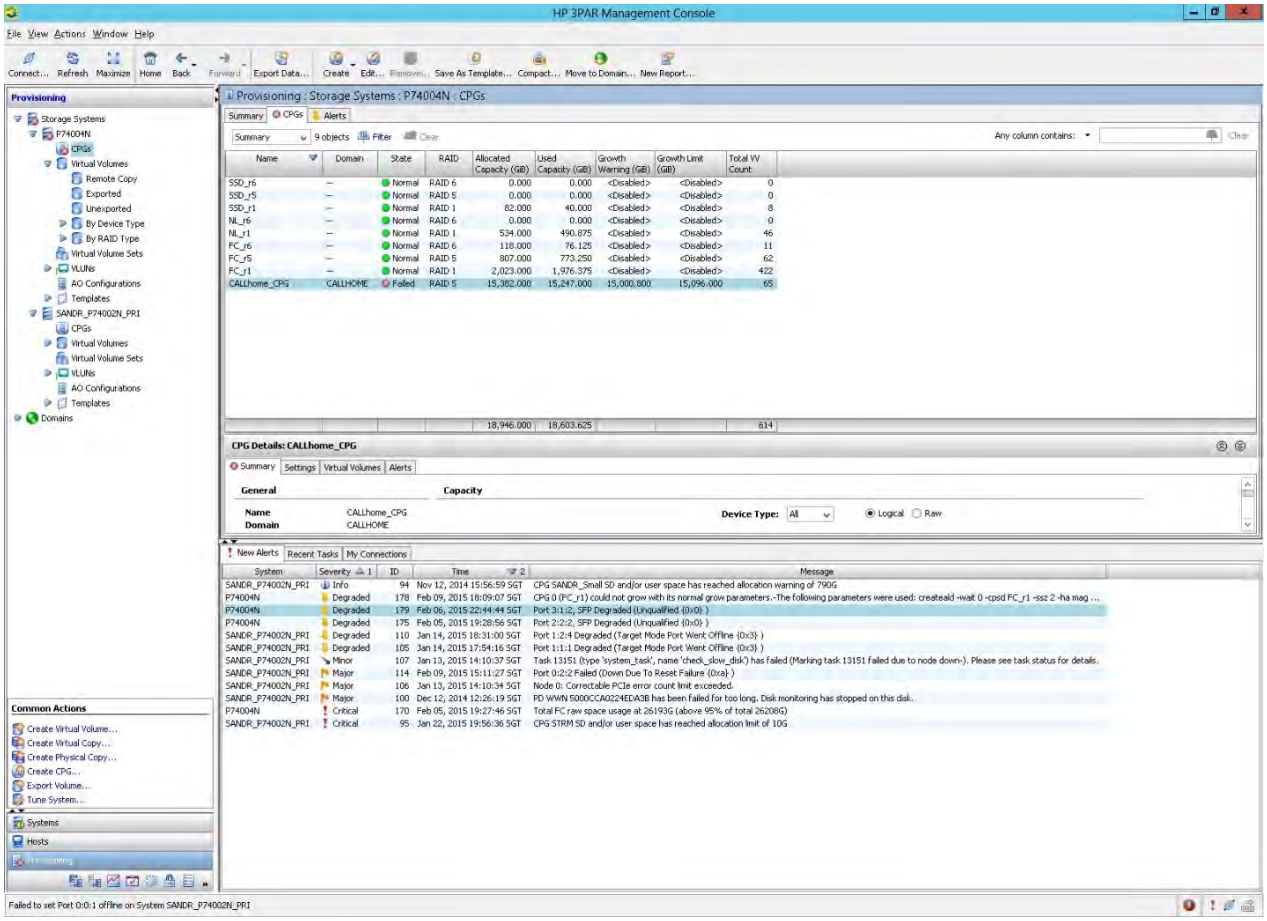
f. In the **ServicesPipeTimeout**, select **Modify**.

g. In the **Decimal** field, enter the number of milliseconds for the service to timeout and select **OK**.

h. In the **File** menu, select **Exit**, and restart the system.

For more information, see **http://support.microsoft.com/kb/2730040**.

7. Check if the alerts generated by the device are received using IMC. You can use softwares such as SNMPUtil, Wireshark, and other Trap receiver tools like SNMP Utility to receive alerts.

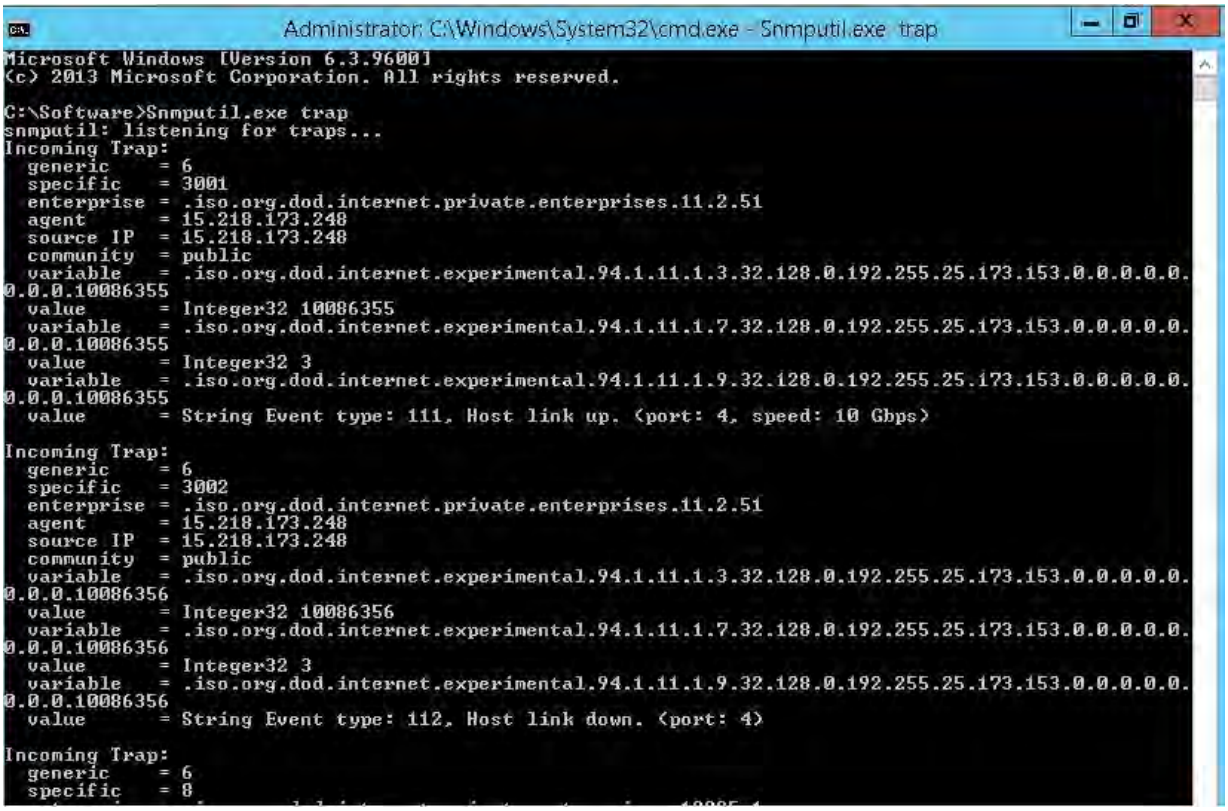


To ensure the traps are received by the destination server, perform the following:

a. Navigate to `Snmputil.exe` and run using the command prompt.

b. In the command prompt, enter `Snmputil.exe trap`, select **Enter**.

The snmputil displays the following `listening to traps`. When a new trap is generated, the following is displayed:

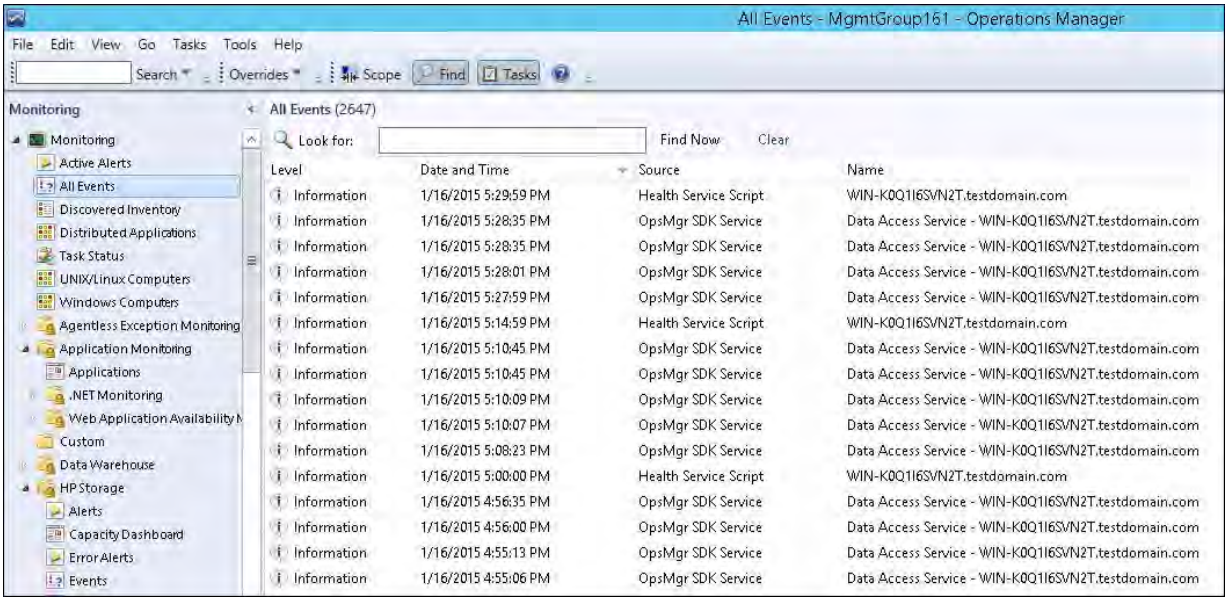


8. Receive alerts in a new view

   To ensure alerts are received in the console, perform the following:

   a. In the System Center Operations Manager Console, navigate to **Monitoring** > **New** > **Event View**.
   b. Select **Create all events** tab, select **OK**.

   The console lists all the alerts as seen below:



   In the events list ensure 3PAR events are displayed.

Websites

General websites

Hewlett Packard Enterprise Information Library

www.hpe.com/info/EIL

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

www.hpe.com/storage/spock

Storage white papers and analyst reports

www.hpe.com/storage/whitepapers

For additional websites, see **Support and other resources**.

Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

  http://www.hpe.com/assistance
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  http://www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:

  Hewlett Packard Enterprise Support Center

  www.hpe.com/support/hpesc

  Hewlett Packard Enterprise Support Center: Software downloads

  www.hpe.com/support/downloads

  Software Depot

  www.hpe.com/support/softwaredepot
- To subscribe to eNewsletters and alerts:

  www.hpe.com/support/e-updates
- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:

  www.hpe.com/support/AccessToSupportMaterials

IMPORTANT:

Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

Hewlett Packard Enterprise Authorized Resellers

For the name of the nearest Hewlett Packard Enterprise authorized reseller, see the following sources:

- In the United States, see the Hewlett Packard Enterprise U.S. service locator website:**http://www.hpe.com/support/service_locator**
- In other locations, see the Contact Hewlett Packard Enterprise worldwide website:**http://www.hpe.com/info/assistance**

Support Information

Customers using HPE Storage Management Pack for SCOM who have valid hardware array or software contracts can open a case with HPE in one of two ways:

- Customers with an HPE Microsoft Support contract may contact HPE Software support by using the Service ID (SAID) associated with the CarePack they have purchased.
- Customers using SCOM with HPE Arrays can open a case using either their serial number of the array or the SAID for the hardware Carepack they have purchased.

Cases can be opened in a number of ways which can be found on **http://www.hpe.com** by selecting your country and then **Customer Support**.

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

http://www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

Remote support and Proactive Care information

HPE Get Connected

www.hpe.com/services/getconnected

HPE Proactive Care services

www.hpe.com/services/proactivecare

HPE Proactive Care service: Supported products list

www.hpe.com/services/proactivecaresupportedproducts

HPE Proactive Care advanced service: Supported products list

www.hpe.com/services/proactivecareadvancedsupportedproducts

Proactive Care customer information

Proactive Care central

www.hpe.com/services/proactivecarecentral

Proactive Care service activation

www.hpe.com/services/proactivecarecentralgetstarted

Warranty information

To view the warranty for your product or to view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products* reference document, go to the Enterprise Safety and Compliance website:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional warranty information

HPE ProLiant and x86 Servers and Options

www.hpe.com/support/ProLiantServers-Warranties

HPE Enterprise Servers

www.hpe.com/support/EnterpriseServers-Warranties

HPE Storage Products

www.hpe.com/support/Storage-Warranties

HPE Networking Products

www.hpe.com/support/Networking-Warranties

Regulatory information

To view the regulatory information for your product, view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the Hewlett Packard Enterprise Support Center:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

www.hpe.com/info/environment

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (**docsfeedback@hpe.com**). When submitting your feedback, include the document title, part number, edition, and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.

Glossary

This glossary defines terms used in this guide or related to this product. It is not a comprehensive glossary of computer terms.

SNMP:

Simple Network Management Protocol (SNMP) is a widely used network monitoring and control protocol. Data is passed from SNMP agents, which are hardware and/or software processes reporting activity in each network device (hub, router, bridge, and so on) to the workstation console used to oversee the network. The agents return information contained in an MIB (Management Information Base), which is a data structure that defines what is obtainable from the device and what can be controlled (turned off, on, and so on).

OpsMgr:

Microsoft System Center Operations Manager 2012 R2 or Microsoft System Center Operations Manager 2016 enables you to monitor your IT services and provides an end-to-end monitoring environment.