

Dell™ EqualLogic™ Storage
Management Pack Suite
Version 4.0 For Microsoft®
System Center Operations
Manager 2007 SP1/R2 and
System Center Essentials 2007
SP1

User's Guide



Notes and Cautions



NOTE: A NOTE indicates important information that helps you make better use of your computer.



CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

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Introduction

This document is intended for system administrators who use the Dell™ EqualLogic™ Storage Management Pack Suite Version 4.0 to manage, and monitor the Dell EqualLogic PS Series Arrays.



NOTE: The Dell EqualLogic Storage Management Pack Suite is supported on Microsoft® Systems Center Operations Manager (SCOM) 2007 SP1/R2 and Systems Center Essentials (SCE) 2007 SP1.

With the integration of the Dell EqualLogic Storage Management Pack Suite Version 4.0 with the SCOM and/or SCE environment, you can classify, manage, and monitor your Dell EqualLogic PS Series Arrays.



CAUTION: The procedures in this document should be performed only by personnel with knowledge and experience in using the Microsoft Windows® operating system, and SCOM or SCE. In order to avoid data corruption and/or data loss, it is recommended that only system administrators or IT generalists use the procedures described in this document.

The readme file packaged with the management pack contains the latest information about software and management station requirements, and information about known issues. The readme file is posted to the Systems Management documentation page on the Dell Support website at support.dell.com/manuals. The readme file is also packaged in the `Dell_EqualLogic_Storage_Management_Pack_Suite_v4.0_A00.msi`.

All references to SCOM in this guide are applicable to SCE as well, unless otherwise explicit product and version information is mentioned.

Accessing the Management Pack and Documentation

The Dell EqualLogic Storage Management Pack Suite is packaged in the `Dell_Equallogic_Storage_Management_Pack_Suite_v4.0_A00.msi` file. You can download the .msi from the Dell Support website at support.dell.com.

The Dell EqualLogic Storage Management Pack Suite Version 4.0 consists of the following:

- Management Packs
 - `Dell.Connections.HardwareLibrary.mp`
 - `Dell.Storage.EqualLogic.mp`
- EqualLogic Helper Files
 - `DellEQLHelper.dll`
 - `DellEQLHelper.dll.config`
 - `DellEQLHelper.tlb`
- Documentation
 - `Dell_EqualLogic_Storage_Management_Pack_Suite_v4.0_UserGuide.pdf`
 - `DellMPv40_EqualLogicMP_Readme.txt`



NOTE: On server operating systems, the installer installs the EqualLogic Helper files.



NOTE: On client operating systems, the installer does not install the EqualLogic Helper files.

Key Features and Functionalities

- The management pack refers to the common base folder utility `Dell.Connections.HardwareLibrary.mp`. It groups all supported Dell devices, which includes the Dell EqualLogic group under **Dell Hardware Group**. Dell EqualLogic devices are grouped under **Dell EqualLogic Group**.

For more information, see "Understanding Dell EqualLogic Storage Management Pack Suite".

- The EqualLogic management pack discovers and manages EqualLogic devices with supported firmware versions. For the list of supported firmware versions, see the Readme file **DellMPv40_EqualLogic_Readme.txt** provided with the management pack suite.
- The Management Pack performs inventory of the supported EqualLogic devices, and monitoring of the EqualLogic member devices with the health status of the EqualLogic member devices rolling up to the EqualLogic group.
- Provides the ability to launch the EqualLogic web console at the EqualLogic group level.
- Displays the SNMP (Simple Network Management Protocol) based hardware alerts for the monitored EqualLogic devices in the **Alerts** view.
- Displays realistic icons for the various components of an EqualLogic member along with the volume information for an EqualLogic group modelled by the EqualLogic management pack in the **Diagram** view.

Understanding Dell EqualLogic Storage Management Pack Suite

Dell Hardware Group Definition

The base folder utility, **Dell.Connections.HardwareLibrary.mp**, defines the Dell hardware group. The Dell EqualLogic management pack and other Dell management packs refer to this base folder utility to group all their corresponding objects, and display the health status of Dell devices under the global **Dell Hardware** group.

After Installing the .MSI package, importing the EqualLogic Storage management pack, and discovering the EqualLogic group, the Management pack groups the corresponding EqualLogic PS series arrays under the Dell EqualLogic Group under the global **Dell Hardware** group.

When you delete or uninstall the management pack, the corresponding PS Series arrays under the **Dell EqualLogic devices** group of the **Dell Hardware** group are removed.

SCOM initially performs a network discovery on a given range of IP addresses. On these network devices, the Dell EqualLogic Management Pack makes use of the Dell EqualLogic Helper for classification and inventory, and uses the Unit Monitors for monitoring the health of the devices.

Dell EqualLogic PS Series Arrays and Dell EqualLogic MP

The Dell EqualLogic PS series arrays include RAID-protected disks, automatic disk sparing, redundant fans and power supplies, and dual high performance control modules, each with multiple Gigabit Ethernet interfaces and a battery-backed cache. You can create a group as the first member and then add arrays to the existing group.

The EqualLogic management pack consists of:

- **Members group:** This consists of the various member arrays and groups one or more arrays up to the group level with the details of the hardware components, such as RAID controller, physical disk, power supply, and network interface cards.
- **Volumes group:** This provides volume information of the EqualLogic group consisting of various EqualLogic member devices.

The management pack defines the rules, tasks, and monitors for the modeled components.

Supported Operating Systems

For the Management Station

For the list of supported operating systems for the Management Station for SCOM, see the Microsoft website at [http://technet.microsoft.com/hi-in/library/bb309428\(en-us\).aspx](http://technet.microsoft.com/hi-in/library/bb309428(en-us).aspx).

Supported EqualLogic PS Series Arrays

The EqualLogic Management Pack supports the following PS Series Arrays:

- PS5000
- PS5500
- PS6000
- PS6500
- PS4000
- PS6010
- PS6510

The above arrays should run the supported firmware versions.

Supported Firmware Versions for EqualLogic Devices

For the list of supported EqualLogic firmware versions, see the readme file (`DellMPv40_EqualLogic_Readme.txt`) provided with the management pack suite. You can access the readme file from the Systems Management documentation page on the Dell Support website at support.dell.com/manuals or from the `Dell_EqualLogic_Storage_Management_Pack_Suite_v4.0_A00.msi` file.

Other Documents You May Need

Besides this guide, you can find the following guides on the Systems Management and Systems documentation pages on the Dell Support website at support.dell.com/manuals:

- The *Overview of Dell EqualLogic™ Products and Resources* gives you an overview of Dell EqualLogic products.

For information on terms used in this document, see the *Glossary* on the Dell Support website at support.dell.com/manuals.

You can also see the EqualLogic documents at <http://www.equallogic.com/resourcecenter/documentcenter.aspx>.

Obtaining Technical Assistance

If at any time you do not understand a procedure described in this guide, or if your product does not perform as expected, different types of help are available. For more information see "Getting Help" in your system's *Hardware Owner's Manual*.

Additionally, Dell Enterprise Training and Certification is available. For more information, see dell.com/training. This service might not be offered in all locations.

Getting Started

Management Station Requirements

Before importing the Dell™ EqualLogic™ Management Pack, install the Dell EqualLogic Helper on the management station to discover the Dell EqualLogic storage arrays.

If you import Dell EqualLogic Management Pack into SCOM without installing the Dell EqualLogic Helper, SCOM does not discover the EqualLogic devices.

Dell EqualLogic Helper

The Dell EqualLogic Helper performs classification, inventory retrieval, and health monitoring of components. This utility is in the form of a .dll file that is included in the management pack suite. It requires registration, and is installed in the folder where you install the Dell EqualLogic Management Pack.

The EqualLogic Management Suite installer installs Dell EqualLogic Helper as a COM+ application for the EqualLogic Management Pack to communicate with EqualLogic devices through a Simple Network Management Protocol (SNMP). The EqualLogic Management Pack uses this utility for inventory, classification, and monitoring the health of EqualLogic devices. The EqualLogic Management Pack cannot manage EqualLogic devices without the COM+ application.

Configuring Management Server Action Account with Normal User Privileges

To configure Management Server Action account with normal user privileges:

- 1 Install SCOM on the management station, with the Management Server Action Account as a normal domain user.
- 2 Import the Dell Management Pack on the management station.
- 3 Rediscover the managed system with the EqualLogic PS Series Arrays management pack.



NOTE: The discovery of the EqualLogic PS Series arrays depends on the discovery cycle time.

Installing the Dell EqualLogic Storage Management Pack Suite v4.0

Pre-Import tasks for the EqualLogic Management Pack

Before you import the EqualLogic Management Pack to SCOM:

- 1 Download the `Dell_EqualLogic_Storage_Management_Pack_Suite_v4.0_A00.msi` file from the Dell Support website at support.dell.com to the destination directory on your local system.
- 2 Run the `Dell_EqualLogic_Storage_Management_Pack_Suite_v4.0_A00.msi` file from the folder where you extracted.
- 3 Follow the wizard to install the management pack.
- 4 Install the management pack to the default location `C:\Dell Management Packs\EqualLogic Storage Mgmt Suite\4.0`.



NOTE: You can change the default location.

- 5 Ensure the `DellEQLHelper.dll` is installed in the Library folder. The default location is `C:\Dell Management Packs\EqualLogic Storage Mgmt Suite\4.0\Library`.

The installer registers the `DellEQLHelper.dll` on the Windows server.

Importing the Management Pack

To import the EqualLogic Storage Array management pack, use the **SCOM Import Management Pack** wizard:

- 1 Click **Start**→**Programs**→**System Center Operations Manager 2007** and select **Operations Console**.
- 2 In **Operations Console**, click **Administration** on the navigation pane.
- 3 Expand the **Administration** tree, right-click **Management Packs**, and select **Import Management Packs**.
- 4 Click **Add**. Select **Add from disk**.



NOTE: This is applicable to SCOM R2 only.

- 5 Type or browse to the management pack location, select the Management Pack you want to import, and click **Open**.

The **Import Management Packs** screen is displayed with the selected management pack displayed in the **Import List**.

- 6 Click **Install** to complete the task.

Using the Various Options in the Installer

Modify (Not supported)

Repair

This option repairs installation errors in the program. **Repair** fixes missing or corrupted files, and registry entries. This option does not change or repair the **DellEQLHelper.dll.config** file.

Remove

This option removes the Dell EqualLogic Storage Management Pack Suite v4.0 and removes the extracted files from the system.

Uninstalling the Dell EqualLogic Storage Management Pack Suite v4.0

To remove the Dell EqualLogic Storage Management Pack Suite v4.0:

- 1 From the **Start** menu select **Settings** → **Control Panel** → **Add/Remove Programs/Programs and Features**.
- 2 Select **Dell EqualLogic Storage Management Pack Suite v4.0 for System Center Operations Manager** and click **Remove**.

You can also uninstall the Dell EqualLogic Storage Management Pack Suite v4.0 by running the `Dell_EqualLogic_Storage_Management_Pack_Suite_v4.0_A00.msi` file and selecting the **Remove** option from the installer.



NOTE: You must uninstall only after deleting the management pack from SCOM. If you uninstall the management pack first, the alert **Dell EqualLogic: Dell EqualLogic Helper not Installed on the Management Server** appears in SCOM Console every 24 hours. In multiple management stations, the alert also appears on a management station that does not monitor the EqualLogic arrays. Ignore the error.

Deleting the Management Pack

Delete the EqualLogic Management Pack before deleting the base folder utility.

To delete the management pack:

- 1 Select **Administration** → **Management Packs** in the SCOM Operations Console.
- 2 Select the EqualLogic Management Pack from the **Management Packs** pane.
- 3 Right-click the selected management pack and click **Delete**.

After deleting the management pack, you can uninstall the Dell EqualLogic Helper from the management station. It is recommended that you relaunch the SCOM Console after deleting the EqualLogic Management Pack.



NOTE: Deleting any of the Management Packs may affect the scope of some user roles.

Microsoft Guidelines for Performance and Scalability for SCOM

For optimal performance, deploy the Dell EqualLogic Management Pack Suite version 4.0 on a dedicated management station.

For information on Microsoft's recommendations for scalability, see the Microsoft website at <http://support.microsoft.com/kb/975057>.

Security Considerations

Operations Console access privileges are handled internally by SCOM. This can be set up using the **User Roles** option under **Administration** → **Security** feature on the SCOM console. The profile of your role determines what actions you can perform. For more information on security considerations, see the *Microsoft Operations Manager 2007 SP1*, *Microsoft Operations Manager 2007 R2*, or the *Microsoft Systems Centre Essentials SP1* online help.

Dell EqualLogic Storage Management Pack Suite Operations

Overview

This chapter describes the various operations that you can perform on Microsoft® Systems Center Operations Manager (SCOM) or Systems Center Essentials (SCE) using the Dell™ EqualLogic™ Storage Management Pack Suite version 4.0.

The EqualLogic Storage Arrays Management Pack allows you to discover, provide inventory information of EqualLogic group and EqualLogic members along with volume information associated with the corresponding EqualLogic Group, and the health monitoring and roll up of the EqualLogic member arrays.

Web Console

The Web console server enables you to monitor and manage your Dell devices with the EqualLogic Management Pack using a browser instead of the Operations Manager 2007 console. You can use the Web console server without installing the Operations console. Using the Web console has the following limitations:

- It provides only the **Monitoring** feature for all Management Packs.
- The **Personalize** view is not available.
- Console Launch tasks are not available.
- Information alerts are suppressed.
- Only the first 200 alerts are displayed in the **Alerts** view.



NOTE: There may be some differences between SCOM console and SCOM Web Console.


Discovery

To discover Dell EqualLogic devices, the devices must appear in the **Network Devices** view under the **Administration** section of the Operations Console.


To add a Dell device to the Network Devices list:

- 1 Log on to the system with an account that has the System Centers Operations Manager(SCOM) Administrators role, for the SCOM Management Group.
- 2 In the Operations Console, click **Administration**.
- 3 At the bottom of the navigation pane, click **Discovery Wizard**.
- 4 Click **Next** after reading the instructions on the **Introduction** screen.
- 5 On the **Computer and Device Management Wizard** menu, select **Network Devices**, and click **Next**.
- 6 Type the **Start** and **End** of the IP address range that you want to scan, the SNMP Community, and select the SNMP version.

For discovery and monitoring of the Dell EqualLogic devices, the supported SNMP version is SNMPv2.

 **NOTE:** These steps may be different in SCOM SP1 and SCE.

- 7 Set the Discovery Timeout and Click **Discover**. The Discovery Progress page is displayed.
- 8 On the **Select Objects to Manage** page, select the devices you want to manage and click **Next**.
- 9 Click **Finish**.

 **NOTE:** You must use only the EqualLogic group IP address to perform discovery of the devices when the management mode is not enabled. When the device is configured for management mode, use the EqualLogic management IP for discovering.

Monitoring

With the EqualLogic Management Pack you can work with the following views:

- Alerts view
- Diagram view
- State view

Alerts View

The **EqualLogic Device Alerts** in the **Alerts** view displays the Dell EqualLogic hardware SNMP alerts for the events received from the EqualLogic PS Series arrays that you are monitoring.

Traps are sent from any NIC in the devices. SCOM does not provide the capability of correlating alerts from multiple IP addresses of a member under an EqualLogic member. Hence, each NIC is associated with the traps that are sent from the corresponding IP address. A custom field 1, which is a combination of Equal logic array name and Equal Logic Group name are added for each alert. You can sort the alerts based on this custom field 1 to see the alerts that belong to a particular EQL member, in the EqualLogic **Alerts** view

To view the alerts for the systems you are monitoring:

- 1** In the Operations Console, click **Monitoring**.
- 2** In the **Monitoring** pane, navigate to the **Dell** folder.
- 3** Click **Alerts View** → **EqualLogic Device Alerts**.

The Operations Console displays the alerts for all the arrays that you are monitoring in the **EqualLogic Device Alerts** pane. These alerts meet the criteria you specified in the **Authoring** pane, such as severity, resolution state, age, or alerts that are assigned to you.

- 4** Select an alert to view its details in the **Alert Details** pane.

Diagram View

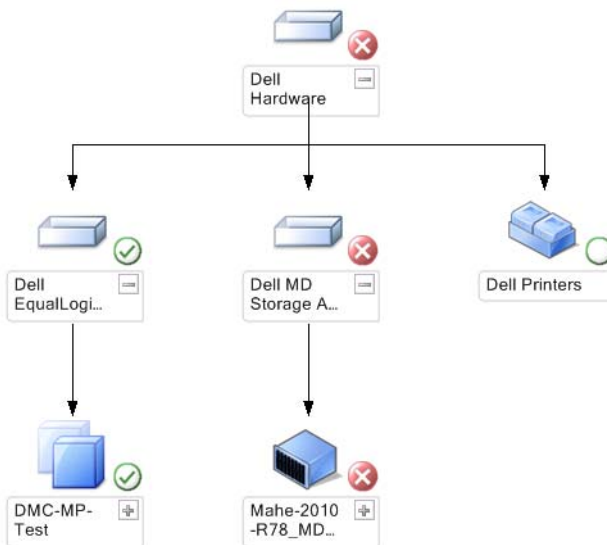
The **Diagram** view offers a hierarchical and graphical representation of all EqualLogic PS Series Arrays on your network that SCOM manages. The **Diagram** view of the EqualLogic arrays displays realistic icons for the various components modeled by the EqualLogic management pack. The EqualLogic management pack and the base management pack offers the following views:

- Complete Diagram View
- EqualLogic Devices

Complete Diagram View

The **Complete Diagram View** offers a graphical representation of all Dell devices that SCOM manages and allows you to expand and verify the status of individual devices and their components in the diagram. The root node for this view is the **Dell Hardware** group. In a large-scale datacenter, all Dell devices are grouped under this.

Figure 3-1. Graphical Representation of Dell Devices in a Large-Scale Datacenter



To access the **Complete Diagram View**:

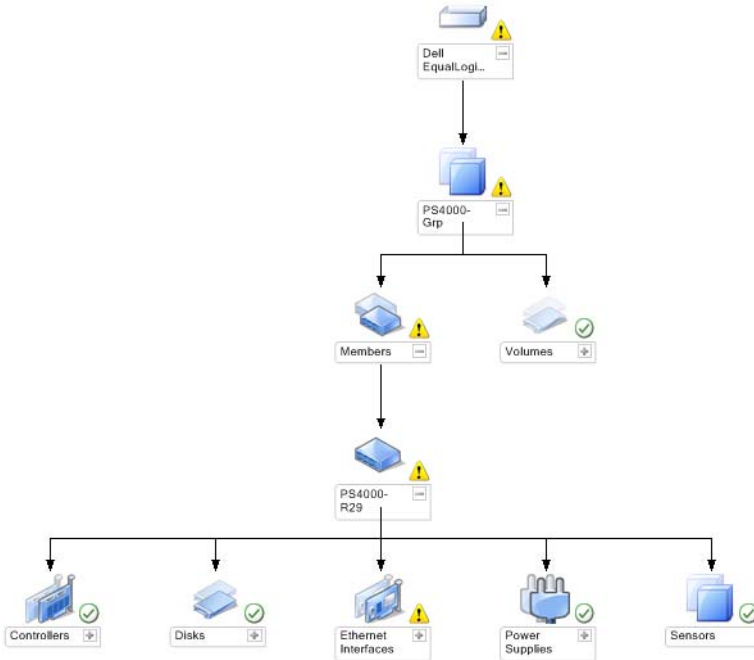
- 1 In the Operations Console, click **Monitoring**.
- 2 In the **Monitoring** pane, navigate to the **Dell** folder.
- 3 Click **Diagram View**→ **Complete Diagram View**.

Select a component in the diagram to view its details in the **Detail View** pane.

EqualLogic Devices

The **EqualLogic Devices** diagram offers a graphical representation of all Dell EqualLogic PS Series storage arrays that SCOM manages and allows you to expand and verify the status of individual devices, and their components in the diagram. The root node for this view is the **Dell EqualLogic** group.

Figure 3-2. Graphical Representation of Dell EQL PS Series Arrays managed by SCOM



You can also view the health status and event processing for the EqualLogic storage devices.

To access the EqualLogic Storage Array Diagram:

- 1 In the Operations Console, click **Monitoring**.
- 2 In the **Monitoring** pane, navigate to the **Dell** folder and click the folder.
- 3 Click **Diagram View** → **EqualLogic Devices**.
- 4 Select a component in the diagram to view its details in the **Detail View** pane. Each group consists of Members and Volumes. A Volume can be spread across multiple disks and multiple group members. View details of the following hardware components of EqualLogic Storage Arrays:
 - Controllers
 - Physical Disks
 - Ethernet Interfaces
 - Power Supplies
 - Sensors

Each group has a maximum of 16 EqualLogic arrays.



NOTE: Sensors can be for temperature and fan.

State View

The **State View** displays the status of each Dell device managed by SCOM or SCE on your network. The EqualLogic Management Pack provides a list of severity level indicators to help you monitor the health of your Dell EqualLogic groups on the network.





To access the **State View**:

- 1 In the Operations Console, click **Monitoring**.
- 2 In the **Monitoring** pane, navigate to the **Dell** folder and click the folder to display the different views.
- 3 Click **State View** → **EqualLogic Devices**.

The Operations Console displays the status of all the Dell EqualLogic PS Series storage arrays that you are monitoring on the right pane.

- 4 Select a state to view its details in the **Detail View** pane.

Table 3-1. Severity Level Indicators

Icon	Severity Level
	Normal/OK. The component is working as expected.
	Warning/Non-critical. A probe or other monitoring device has detected a reading for the component that is above or below the acceptable level. The component may still be functioning, but it could fail. The component may also be functioning in an impaired state.
	Critical/Failure/Error. The component has either failed or failure is imminent. The component requires immediate attention and may need replacement. Data loss may have occurred.
	The health status is not applicable for the specific component.

Launching EqualLogic Console

You can launch the EqualLogic Console from the Actions pane of the SCOM Console.

When you select an EqualLogic group in the **Diagram** view or **State** view, the Launch EqualLogic Console task appears in the **Actions** pane under **Dell EqualLogic Member Group**.

Click **Launch EqualLogic Console** to perform various functions on the EqualLogic device.

Customizing the EqualLogic Storage Management Pack

Unit Monitors

You can customize the following parameters of the EqualLogic Management Pack unit monitors by using overrides:

- **Enabled:** Allows you to enable or disable monitors. You can choose the **Override Setting** to be **True** or **False**. The default setting is **True**.
- **Interval in Seconds:** The frequency (in seconds) with which the Management Pack polls the Dell device to check the health of a component. The default setting for monitors could range between 3600 - 4300 seconds.



NOTE: All the unit monitors are triggered by a periodic poll configured as IntervalSeconds.

Table 3-2. Dell Monitors -EqualLogic Storage Arrays

Group Name	Unit Monitor Name	Description	Default Periodic Poll Setting
Dell EqualLogic Member	Dell EqualLogic Member Status (Periodic)	Unit Monitor for all EqualLogic members: Tracks the global health status of the EqualLogic member.	3600 seconds (60 minutes)
Dell EqualLogic Member Controller	Dell EqualLogic Controller Status (Periodic)	Unit Monitor for EqualLogic Controllers: Indicates the health of the Controllers.	3700 seconds (63 minutes)
Dell EqualLogic Member Disk	Dell EqualLogic Physical Disk Status (Periodic)	Unit Monitor for EqualLogic Physical Disks: Indicates the health of the storage array's physical disks.	4320 seconds (62 minutes)

Table 3-2. Dell Monitors -EqualLogic Storage Arrays (continued)

Group Name	Unit Monitor Name	Description	Default Periodic Poll Setting
Dell EqualLogic Member Ethernet Interface	Dell EqualLogic Ethernet Interface Status (Periodic)	Unit Monitor for EqualLogic Ethernet Interfaces: Indicates the health of the network interfaces.	3500 seconds (70 minutes)
Dell EqualLogic Member PowerSupply	Dell EqualLogic Power Supply Fan Status (Periodic)	Unit Monitor for Power Supply Fans: Indicates the health status of the power supply fans.	3900 seconds (60 minutes)
	Dell EqualLogic Power Supply Module Status (Periodic)	Unit Monitor for EqualLogic Power Supplies Modules: Indicates the health of the storage array's power supplies.	3800 seconds (68 minutes)

Table 3-2. Dell Monitors -EqualLogic Storage Arrays (continued)

Group Name	Unit Monitor Name	Description	Default Periodic Poll Setting
Dell EqualLogic Member Sensors	Dell EqualLogic Fan Sensor Status (Periodic)	Dependency Monitor for fans on the EqualLogic chassis: Indicates the health status of the fans on the EqualLogic chassis. This unit monitor contains parameter names such as 'Number of SNMP query Retries' and 'SNMP Query Timeout in Milliseconds(ms)'	3975 seconds
	Dell EqualLogic Temperature Sensors Status (Periodic)	Unit Monitor for EqualLogic Temperature Sensors: Indicates the health of all temperature sensors of the member array components. This unit monitor contains parameter names such as 'Number of SNMP query Retries' and 'SNMP Query Timeout in Milliseconds(ms)'	3950 seconds (67 minutes)
Dell EqualLogic Volume	Dell EqualLogic Volume Status (Periodic)	Unit Monitor for EqualLogic Volumes: Indicates the health of the EqualLogic Volumes.	4200 seconds (65 minutes)

Object Discoveries

You can customize the following EqualLogic Management Pack discovery parameters, using overrides:

- **Enabled:** Allows you to enable or disable discoveries. You can choose the **Override Setting** to be **True** or **False**.
- **IntervalSeconds:** The frequency (in seconds) with which the Dell Management Pack discovers the component instance and attributes of your Dell device. The default value for this attribute is 86400 seconds (24 hours).

To specify override parameters:

- 1 Launch the SCOM console and click the **Authoring** tab.
- 2 Select **Object Discoveries** under **Management Pack Object** in the **Authoring** pane.
- 3 In the **Object Discoveries** pane, select any object and under the object select **Dell EqualLogic Discovery**.
- 4 Right-click on **Dell EqualLogic Discovery** and from the pop-up menu select **Overrides** → **Override the Object Discovery** → **For all objects of class: SNMP Network Device**. The **Override Properties** window is displayed.
- 5 Check the object, and change the override value.
- 6 Click **Apply**.

When you import the EqualLogic Management Pack suite into the SCOM console, the management pack uses SCOM's network devices to perform further classification into SCOM classes. The default schedule is 24 hours.

Rules

The EqualLogic Management Pack displays the SNMP based hardware traps from the EqualLogic arrays

There are 26 SNMP alert rules which process all SNMP traps from the EqualLogic device and display them as Dell EQL alerts in SCOM

These alerts are displayed in the **EqualLogic Device Alerts** under the **Alerts** view by the SCOM console of the management pack.

Table 3-3. List of Supported EqualLogic SNMP Hardware Alerts

Alert Name	Description	Severity
Dell EqualLogic : Temperature sensor high threshold exceeded	The temperature sensor(<sensor>) has exceeded the high threshold. Temperature Value = <temperature> degrees C	2 (Critical)
Dell EqualLogic : Temperature sensor low threshold exceeded	The temperature sensor(<sensor>) has exceeded the low threshold. Temperature Value = <temperature> degrees C	2 (Critical)
Dell EqualLogic : Fan Speed high threshold exceeded	The fan(<fan name>) speed has exceeded the high threshold. Fan Speed = <speed> rpm	2 (Critical)
Dell EqualLogic : Fan Speed low threshold exceeded	The fan(<fan name>) speed has exceeded the low threshold. Fan Speed = <speed> rpm	2 (Critical)
Dell EqualLogic : Power Supply fan failure	The Power Supply module (<power supply module name>) fan has failed.	2 (Critical)
Dell EqualLogic : Power Supply failure	The Power Supply module (<power supply module name>) has detected a failure.	2 (Critical)
Dell EqualLogic : RAID set double faulted	The RAID set has been detected to have double faulted	1 (Warning)
Dell EqualLogic : Both Fan Trays removed	Both Fan Trays of the member has been removed from the chassis.	2 (Critical)
Dell EqualLogic : RAID Lost Cache	RAID driver is unable to recover the battery-backed cache	2 (Critical)
Dell EqualLogic : One Fan tray removed	One Fan tray of the member has been removed from the chassis.	1 (Warning)

Table 3-3. List of Supported EqualLogic SNMP Hardware Alerts

Alert Name	Description	Severity
Dell EqualLogic : RAID Lost Block table full	The RAID Lost Block table is full.	1 (Warning)
Dell EqualLogic : Battery has less than 72 hours of charge	The battery has insufficient charge to survive a 72 hour power outage.	1 (Warning)
Dell EqualLogic : RAID Orphan Cache	The RAID driver found data in the battery-backed cache does not have a matching disk.	1 (Warning)
Dell EqualLogic : Multiple RAID sets found	Multiple RAID sets found. The array cannot choose which one to initialize.	1 (Warning)
Dell EqualLogic : NVRAM Battery failed	The NVRAM Battery failed. The NVRAM can no longer be used.	2 (Critical)
Dell EqualLogic : Critical Hardware component failed	A Critical Hardware component of the member has failed	2 (Critical)
Dell EqualLogic : EMM Link failure	Enclosure Management Services are unavailable.	2 (Critical)
Dell EqualLogic : Incorrect controller module inserted	An Incorrect control module has been inserted into the chassis.	1 (Warning)
Dell EqualLogic : High Battery temperature	The cache battery temperature exceeds upper limit.	2 (Critical)
Dell EqualLogic : Low Ambient temperature	One or more sensors are below the critical temperature range.	1 (Warning)
Dell EqualLogic : Enclosure is open for a long time	The enclosure is open for a long time.	1 (Warning)
Dell EqualLogic : Ops Panel Missing or broken	Ops Panel is missing or broken.	1 (Warning)
Dell EqualLogic : Both the Sumo Channel cards missing	Both the Sumo Channel cards are missing	2 (Critical)
Dell EqualLogic : EIP failed in Sumo	EIP failed in Sumo.	2 (Critical)

Table 3-3. List of Supported EqualLogic SNMP Hardware Alerts

Alert Name	Description	Severity
Dell EqualLogic : Both the Sumo Channel cards failed	Both the Sumo Channel cards failed.	2 (Critical)
Dell EqualLogic : EqualLogic Disk Status changes from one state to another	The EqualLogic Disk Status has changed from one state to another.	0 (Informational)

Customizing Rules

You can customize the Alert rules by setting override parameters for the rules.

To customize the rules:

- 1** Click the **Authoring** tab in the Operations Console.
- 2** Select **Rules** under Management Pack Objects in the **Authoring** pane.
- 3** In the Rules pane, select a rule.
- 4** Right-click the rule and select the **Overrides** option.
- 5** Select **Disable the Rule** and any of the sub-options to disable the rule.
- 6** Select **Override the Rule** and any of the sub-options to set the override parameters for the rule.

You can also change the Severity setting for the rule.

- 7** Click **OK** to apply the override parameter to your rule or **Cancel** to cancel the changes.

Appendix

Known Issues in Microsoft System Center Operations Manager (SCOM) 2007 SP1/System Center Essentials (SCE) 2007 SP1

- 1 The Dell Management Pack Diagram Views displays a blank screen intermittently.

The actual diagram view will not come up even after refreshing the screen several times.

- 2 Dell alerts are not sorted according to their age.

Check the registry on the managed system that has this problem. There could be a left-over view definition that has set the sorting flags to 'false'. In some instances, when you import a management pack with changes to the sorting flags, the sorting flags may not get updated in the registry. If you delete the settings for the view in the registry, they are recreated from the new management pack when you navigate to that view again. You can also edit the sorting flags in the registry for the view.

Registry edit:

```
HKEY_CURRENT_USER\Software\Microsoft\Microsoft  
Operations  
Manager\3.0\Console\%GUID.ViewTitle%AlertView\Age
```

To enable sorting of alerts, ensure the keys **IsSortable** and **IsSorted** are set to 1.

- 3 Under certain conditions, the following error messages are displayed on the Operations Console of the management station:
 - `MonitoringHost.exe Handle Count Threshold Alert Message (Management Server)`
 - `MonitoringHost.exe Private Bytes Threshold Alert Message (Management Server)`

To resolve this issue, see the Microsoft KB968760 available on the Microsoft support site at support.microsoft.com and the Technet blog, <http://blogs.technet.com/kevinholman/archive/2009/08/17/do-you-get-alerts-about-very-high-handle-count-on-your-rms.aspx>

- 4 Under certain conditions, an error message is displayed on the Operations Console of the management station with an Event ID 623 and Event Source as **Health Service ESE Store**.

To resolve this issue, see the Microsoft KB975057 available on the Microsoft support site at support.microsoft.com.

Microsoft Fixes for SCOM

- 1 The SCOM console displays a run time error.

A run time error (Microsoft Visual C++ Runtime Library) with the following message is displayed under some instances - Runtime Error! Program: C:\Program Fil... R6025 - pure virtual function call.

To resolve this issues, see Microsoft KB951526 available on the Microsoft support site at support.microsoft.com.

- 2 The System Center Operations Manager 2007 console may crash in Windows Server™ 2008 or in Windows Vista™ when you open the Health Explorer window.

In the Alerts view, when you right-click an item to open the Health Explorer window, the SCOM 2007 console may stop responding. You cannot use Health Explorer to see any monitored objects in Windows Server 2008 or in Windows Vista™.

To resolve this issue, see Microsoft KB951327 available on the Microsoft support site at support.microsoft.com.

3 When you upgrade an Operations Manager agent system from Windows Server 2003 to Windows Server 2008, the Health Service does not start on the computer.

This issue occurs because the upgrade removes the certificate store in which the Health Service includes its certificate for secure storage data encryption. When the secure storage manager component of the Health Service initializes, it fails if there is a certificate serial number that is set, but the store does not exist.

To resolve this issue, see Microsoft KB954049 available on the Microsoft support site at support.microsoft.com.

4 The Operations Manager Web Console does not display pages correctly because of changes in User Access Control (UAC) in Windows Server 2008.

You may experience one or more of the following situations:

- The Web Console does not open.
- The My Workspace page does not display.
- **Performance and Power Monitoring** views do not display.

To resolve this issue, see Microsoft KB954049 available on the Microsoft support site at support.microsoft.com.

5 After you upgrade a computer that performs the Operations Manager Management Server role from Windows Server 2003 to Windows Server 2008, the Operations Manager performance counters are not registered.

To resolve this issue, see Microsoft KB954049 available on the Microsoft support site at support.microsoft.com.

6 The SCOM console shows a Health service error message. SCOM generates the error - "Health service host process has stopped working".

The error message - "Health service Host Process encountered a problem and needed to close" pops up once in a while. As a result of this Health Service crash, you may notice unexpected behavior in the discovery and monitoring of Dell devices.

To resolve this issue, see Microsoft KB951526 available on the Microsoft support site at support.microsoft.com.

7 SCOM cannot receive SNMP traps on Win2k8 and Vista systems.

System Center Operations Manager 2007 cannot receive SNMP trap data when you use a Windows Server 2008-based computer or a Windows Vista-based computer as a proxy agent for SNMP devices.

To resolve this issue, see Microsoft KB958936 available on the Microsoft support site at support.microsoft.com.