

Dell™ PowerVault™ MD
Storage Arrays Management
Pack Suite Version 4.0
For Microsoft® System Center
Operations Manager 2007 and
System Center Essentials 2007
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.

Information in this document is subject to change without notice.

© 2010 Dell Inc. All rights reserved.

Reproduction of these materials in any manner whatsoever without the written permission of Dell Inc. is strictly forbidden.

Trademarks used in this text: *Dell*, the *DELL* logo, *OpenManage*, and *PowerVault* are trademarks of Dell Inc.; *Microsoft*, *Windows*, *Windows Server*, and *Windows Vista* are either trademarks or registered trademarks of Microsoft Corporation in the United States and other countries.

Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Inc. disclaims any proprietary interest in trademarks and trade names other than its own. Dell is not responsible for the availability of external websites or their contents.

January 2010

Contents

1	Introduction	7
	Accessing the Management Pack and Documentation.	8
	What is New in Dell MD Storage Arrays Management Pack Suite?	9
	Understanding Dell MD Storage Arrays Management Pack Suite	10
	Dell Hardware Group Definition	10
	PowerVault MD 3000/3000i Storage Arrays	10
	Supported Dell MD Storage Arrays	12
	Supported Operating Systems	12
	For the Management Station	12
	For the Managed Node	12
	Supported Firmware Versions For PowerVault MD3000/MD3000i Storage Arrays	12
	Other Documents You May Need	13
	Obtaining Technical Assistance	13
2	Getting Started	15
	Management Station Requirements.	15
	Generic Requirements	15
	Dell Discovery Utility	15

Managed System Requirements	16
Configuring Management Server Action Account with Normal User Privileges	16
Importing the MD Storage Array Management Pack into SCOM	16
Pre-Import Tasks for the MD Storage Array Management Pack	16
Importing the Management Pack.	17
Microsoft Guidelines for Performance and Scalability for SCOM.	18
Upgrading From Previous Management Packs	18
Deleting the Management Pack	19
Security Considerations	19
Security Consideration for Dell Discovery Utility	20
3 Dell™ MD Storage Arrays Management Pack Suite Operations	21
Overview	21
Web Console	21
Discovery	22
Monitoring	23
Alerts View	23
Diagram View	24
State View.	27

Customizing the MD Storage Array Management Pack	28
Unit Monitors	28
Object Discoveries	30
Rules	31
A Appendix	33
Known Issues in Microsoft System Center Operations Manager (SCOM) 2007 SP1/ System Center Essentials (SCE) 2007 SP1	33
Microsoft Fixes for SCOM	34

Introduction

This document is intended for system administrators who use the Dell™ MD Storage Arrays Management Pack Suite Version 4.0 to manage and monitor the Dell PowerVault™ MD3000, MD3000i, and PowerVault MD1000 storage arrays that are daisy-chained to MD3000/MD3000i storage arrays.



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

With the integration of the Dell MD Storage Arrays Management Pack Suite Version 4.0 with the SCOM and/or SCE environment, you can manage, monitor, and ensure the availability of your Dell PowerVault MD storage 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. Due to the possibility of 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, as well as 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 files are also packaged in the self-extracting executable `Dell_MD_StorageArray_Management_Pack_Suite v4.0_A00.exe` file.

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 management pack, two utilities, readme files, and this guide are packaged in the self-extracting executable

Dell_MD_StorageArray_Management_Pack_Suite_v4.0_A00.exe file. You can download the .exe from the Dell Support website at support.dell.com.

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

- Dell.Connections.HardwareLibrary.mp
- Dell.Storage.MDStorageArray.mp
- Dell_MDStorageArray_ABB.exe
- Dell_MDStorageArray_Management_Pack_Suite_v4.0_UserGuide.pdf
- DellMPv40_MDStorageArrayMP_Readme.txt

The **Dell_MDStorageArray_ABB.exe** is another self-extracting executable which contains the following:

- Dell_MDStorageArray_ABBConfig.cfg
- Dell_MDStorageArray_ip.cfg
- DellABB.exe
- DellDiscoveryUtility.chm
- DellDiscoveryUtility.exe
- DellDiscoveryUtility.exe.config
- DellMPv40_DellDiscoveryUtility_Readme.txt
- MDAutoDiscovery.dll

What is New in Dell MD Storage Arrays Management Pack Suite?

- The management pack now refers to the common base folder utility `Dell.Connections.HardwareLibrary.mp`.

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

- The MD Storage Array Management Pack discovers and manages storage arrays using IPv6 addresses with firmware versions that support IPv6 addresses.
- The MD storage arrays management pack suite includes the Dell Discovery utility that discovers the PowerVault MD3000/MD3000i devices in your network and creates an IP listing file with the IP addresses of the storage arrays. SCOM uses this IP listing file to discover and manage the storage arrays. The Dell Discovery utility supports both IPv4 and IPv6 addresses.

For more information about the Dell Discovery utility, see the online help provided with the utility.

- The Diagram view of the MD storage arrays displays realistic icons for the various components modeled by the MD Storage Array management pack.
- The management pack provides Recovery Guru information as a point of reference for troubleshooting the MD Storage Array events. For more information see, "Accessing Recovery Guru Information".

Understanding Dell MD Storage Arrays Management Pack Suite

Dell Hardware Group Definition

The base folder utility, `Dell.Connections.HardwareLibrary.mp`, defines the Dell hardware group. The Dell MD Storage Array 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 importing this utility, the MD storage arrays management pack displays the corresponding MD storage arrays under the **Dell Hardware** group.

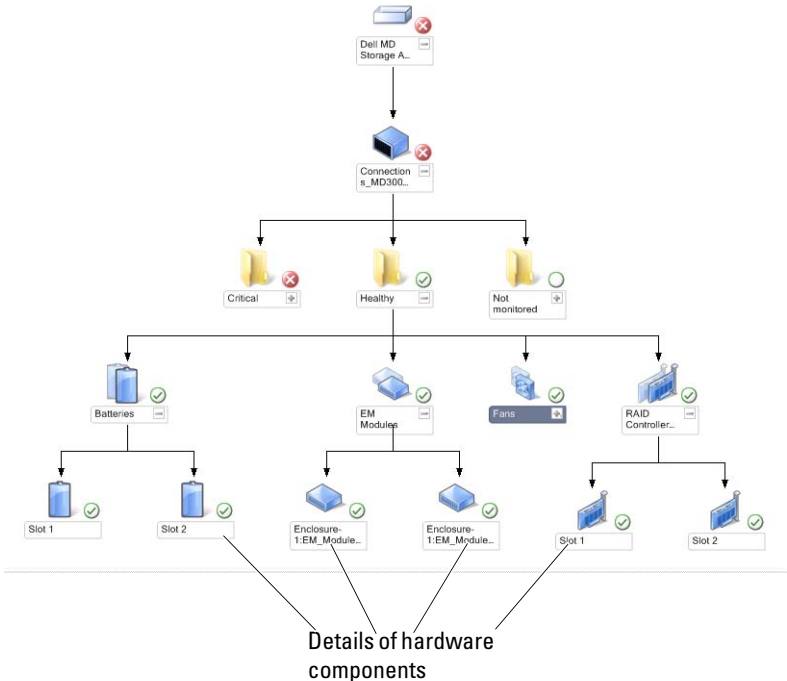
When you delete or uninstall the management pack, the corresponding storage arrays under the **Dell Hardware** group are removed.

PowerVault MD 3000/3000i Storage Arrays

The MD Storage Array management pack structures the components on a high level up to the group level, as well as the details of the hardware components, such as RAID controller, physical disk, power supply, fan, virtual disk, battery, and enclosures. This management pack defines the rules, tasks, and monitors for the modeled components.

Figure 1-1 details the components modeled by the Dell MD Storage Arrays Management Pack.

Figure 1-1. Diagrammatic Representation of Components Modeled by the MD Storage Array Management Pack



Supported Dell MD Storage Arrays

The Dell MD Storage Management Pack Suite Version 4.0 supports Dell PowerVault MD3000/MD3000i storage arrays and PowerVault MD1000 storage arrays daisy-chained to MD3000/MD3000i storage arrays.

Supported Operating Systems

For the Management Station

For the list of supported operating systems for the Management Station for SCOM/SCE, 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).

For the Managed Node

When you discover storage arrays through in-band, install the Modular Disk Storage Manager (MDSM) software on the system where you attach the storage array through the SAS or iSCSI ports.

For the list of the supported operating systems for MDSM, see the Support Matrices for Dell PowerVault MD3000/MD3000i systems available on the Dell Support website at support.dell.com/manuals.

Supported Firmware Versions For PowerVault MD3000/MD3000i Storage Arrays

For the minimum supported versions of firmware for the PowerVault MD3000/MD3000i devices, see the readme file (DellMPv40_MDStorageArrayMP_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 self-extracting executable, Dell_MD_StorageArray_Management_Pack_Suite_v4.0_A00.exe

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 *Dell PowerVault MD3000 and MD3000i Array Tuning Best Practices* guides MD3000 and MD3000i customers through the advanced processes behind tuning their storage array to best suit their individual needs.
- The *Dell PowerVault MD3000 Support Matrix* provides information on supported software and hardware for Dell PowerVault MD3000 systems.
- The *Dell PowerVault MD3000i Support Matrix* provides information on supported software and hardware for Dell PowerVault MD3000i systems.
- The *Hardware Owner's Manual* provides information about your system, installing the system components and troubleshooting your system.
- The *Dell PowerVault Modular Disk Storage Manager User's Guide* provides information on how to use the MDSM software to manage the Dell MD storage arrays.

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

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

Generic Requirements

- To discover Dell™ PowerVault™ MD3000/ MD3000i storage arrays and PowerVault MD1000 storage arrays daisy-chained to MD3000/MD3000i, the Array Bridge Broker (ABB) is a prerequisite on the management server.
- Extract the contents of the **Dell_MDStorageArray_ABB.exe** to the default location **C:\Dell_MDStorageArray_ABB**. The MD Storage Array management pack scans this default path to access the **DellABB.exe** file.
 - ✍ **NOTE:** If you have multiple management stations, you must extract the contents of **Dell_MDStorageArray_ABB.exe** only on one of the management stations to avoid viewing duplicate MD storage arrays on the SCOM console.
- Ensure that the default IP listing file **Dell_MDStorageArray_ip.cfg** is present in the **C:\Dell_MDStorageArray_ABB** folder.
- For Microsoft® Systems Center Operations Manager (SCOM) to run the **DellABB.exe** file, ensure that there is a minimum disk space of 1 GB on the management station in an environment where you are managing a large number of devices.

Dell Discovery Utility

Install the Microsoft .Net 2.0 framework or later on the system where you run the utility. You must log into the system as a user with administrator privileges to:

- Run the Dell Discovery utility
- Read and modify the IP configuration file

For more information on the Dell Discovery utility, see the online help provided with the utility.

Managed System Requirements

Install the Modular Disk Storage Manager (MDSM) Client on the system that hosts the PowerVault MD3000/MD3000i storage arrays to discover the Dell storage device through in-band. Download the latest *resource CD* from the Dell Support website at support.us.dell.com/support/downloads/format.aspx?releaseid=R242364.

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 MD Storage Arrays management pack.



NOTE: The discovery of the storage array depends on the discovery cycle time.

Importing the MD Storage Array Management Pack into SCOM

Pre-Import Tasks for the MD Storage Array Management Pack

Before you import the MD Storage Array Management Pack to SCOM:

- 1 Download the management pack from the Dell Support website at support.dell.com to the destination directory on your local system.
- 2 Extract the management pack to the default location C:\Dell Management Packs\MD Storage Array Mgmt Suite\4.0.

- 3 Extract the self-extracting executable **Dell_MDStorageArray_ABB.exe** to the default location **C:\Dell_MDStorageArray_ABB**.



NOTE: If you do not place the ABB files in the default location, then SCOM generates a warning alert that is listed under **Active Alerts** and the **MD Storage Array Alerts** in the **Monitoring** pane. The warning alert displays the following message: "DELL MD array file not found on the specific location". The same alert is displayed on the management station that does not monitor the storage arrays if you have multiple management stations. You must ignore the error.

- 4 Perform *one* of the following actions:
 - Run the Dell Discovery utility (**DellDiscoveryUtility.exe**) to discover the PowerVault MD3000/3000i storage arrays in the network, and automatically update the **Dell_MDStorageArray_ip.cfg** IP listing file with the IP addresses of the storage arrays.
 - Manually update the **Dell_MDStoragearray_ip.cfg** file with the IP addresses of the storage arrays in the network. Ensure that you update the IP addresses in the semi-colon separated format, in a single line.
For example - 10.94.1.1;10.94.1.2;10.94.1.3;10.94.1.4;10.94.1.5 or 2001:db8:85a3::8a2e:370:7334; 2001:db8:85a3::8a2e:370:7335
- 5 Ensure that you import the base folder utility (**Dell.Connections.HardwareLibrary.mp**) prior to importing the MD Storage Array management pack.

Importing the Management Pack

To import the MD 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**.

- 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.

Microsoft Guidelines for Performance and Scalability for SCOM

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



NOTE: When you monitor a large number of MD storage arrays, there is a possibility that the SCOM console could generate **Script or executable (failed to run/was dropped)** warning alerts. To resolve this issue you must choose *one* of the following options:

- a. Disable all MD Storage Arrays unit monitors except the **Dell MD Array Device Status(Periodic)** unit monitor. For more information on unit monitors, see "Unit Monitors".
- b. Scale up the number of management stations to monitor the large number of MD storage arrays.

For information on Microsoft's recommendations for scalability, see the Microsoft website at [http://technet.microsoft.com/hi-in/library/bb735402\(en-us\).aspx](http://technet.microsoft.com/hi-in/library/bb735402(en-us).aspx)



NOTE: Ensure that the **Autogrow** option is enabled in **Operations Manager Data Warehouse and/ or Database**.

Upgrading From Previous Management Packs

Upgrading from the previous management pack is not supported. Ensure you delete Dell Storage Arrays Management Pack 3.1.x (Dell.Connections.StorageArray.mp) before importing the Dell MD Storage Arrays Management Pack Suite version 4.0.

Deleting the Management Pack

Delete the MD Storage Array Management Pack before deleting base folder utility.

To delete the management pack:

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

After deleting the management pack, it is recommended that you relaunch the SCOM Console.



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

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.

Security Consideration for Dell Discovery Utility

When you run Dell Discovery utility for first time on any system, to discover the MD storage arrays, there is a delay of 40-45 seconds to launch the utility if the system does not have access to the internet.

This problem occurs because a .NET Framework 2.0 managed assembly that has an Authenticode signature takes longer than usual to load. The signature is always verified when the .NET Framework 2.0 managed assembly that has an Authenticode signature is loaded.

To avoid the delay in launching the utility on a system without internet access:

- 1 Open the `DellDiscoveryUtility.exe.config` file from the location where you have extracted the contents `Dell_MDStorageArray_ABB.exe`.
- 2 Set the value of `<generatePublisherEvidence enabled="True" />` to `"False"`.

Dell™ MD Storage Arrays 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 MD Storage Arrays Management Pack Suite version 4.0.

The MD Storage Arrays Management Pack allows you to perform the following operations to manage Dell PowerVault™ MD3000/MD 3000i storage arrays and PowerVault MD1000 storage arrays daisy-chained to MD3000/MD3000i storage arrays:

- Discover and monitor the health of components and display alerts for Dell PowerVault MD3000/MD3000i storage arrays through out-of-band and in-band using the host system's IP address.
- Discover PowerVault MD1000 storage arrays that are daisy-chained to the PowerVault MD3000/MD3000i storage arrays.
- Manage alerts from PowerVault MD3000/MD3000i storage arrays.

Web Console

The Web Console server enables you to monitor and manage your Dell devices with the MD Storage Arrays 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.
- Only the first 200 alerts are displayed in the **Alerts** view.



NOTE: The Alert view is applicable only to SCOM 2007 R2 version.

Discovery

To discover PowerVault MD3000/MD3000i storage arrays in the network, an important pre-requisite is the IP listing file that contains the IP addresses of the PowerVault MD3000/MD3000i storage arrays.

The default IP listing file, `Dell_MDStorageArray_ip.cfg` is available on the management station where you extracted the Array Bridge Broker (ABB) files, and the Dell Discovery utility. You can create an IP listing file with a different name and also save the file in a different folder location. However, you must ensure that you specify the override parameters in the Authoring pane of the SCOM console.

To specify override parameters for the IP listing file:

- 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 MD Storage Array Discovery**.
- 4 Right-click on **Dell MD Storage Array Discovery** and from the pop-up menu select **Overrides** → **Override the Object Discovery** → **For all objects of class: Management Server**. The **Override Properties** window is displayed.
- 5 Select the **IPConfigFilePath** option and specify the new file name and path under **Override Value**.
- 6 Click **Apply**.

When you import the MD Storage Arrays Management Pack into the SCOM console, the management pack scans the IP listing file at scheduled intervals to discover and monitor the PowerVault MD3000/MD3000i storage arrays. The default schedule is 24 hours.

For more information on configuring the IP listing file, see "Pre-Import Tasks for the MD Storage Array Management Pack".

For more information on the Auto Discovery utility, see the online help provided with the utility.

Monitoring

With the MD Storage Array Management Pack you can work with the following views:

Alerts View

The **Alerts** view displays alerts for the events received from the PowerVault MD3000/MD3000i storage arrays that you are monitoring.

To view the alerts for the systems you are monitoring:

- 1 In the Operations Console, click **Monitoring**.
- 2 In the Monitoring pane on the left side, navigate to the Dell folder to display the different views.
- 3 Click **Alerts View** → **MD Storage Array Alerts**.

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

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

Accessing Recovery Guru Information

The MD Storage Array management pack provides Recovery Guru information as a point of reference assistance in troubleshooting the MD storage arrays for the respective events.

To access the Recovery Guru Information:

- 1 Select the alert in the **Alerts** view.
- 2 In the **Alert Details** pane, scroll down the details of the knowledge base and view the information. The knowledge base contains information such as important notes, recovery steps, recovery procedure for storage arrays with one controller, recovery procedure for storage arrays with two controllers, and additional notes.

Diagram View

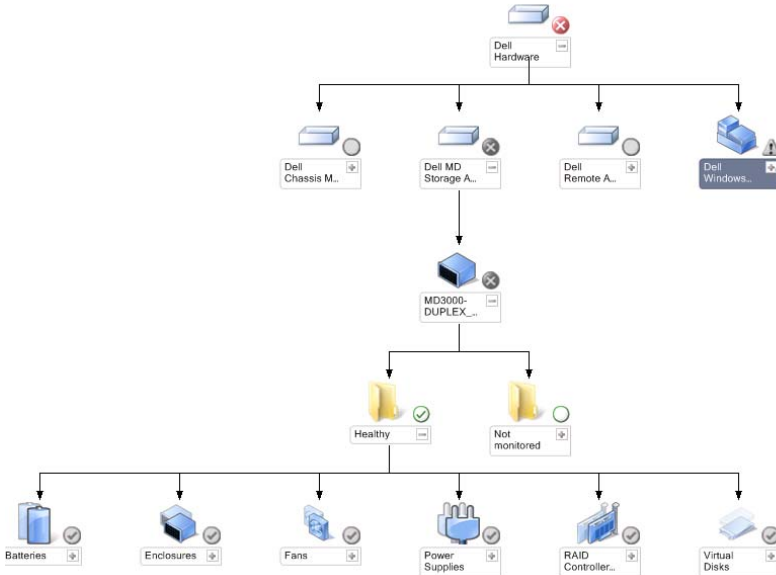
The **Diagram** view offers a hierarchical and graphical representation of all PowerVault MD3000/MD3000i Storage Arrays on your network that SCOM manages. The **Diagram** view of the MD storage arrays displays realistic icons for the various components modeled by the MD Storage Array management pack. The MD Storage Array management pack offers the following views:

- Complete Diagram View
- MD Storage Array Diagram

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.

Figure 3-2. Graphical Representation of all Dell Devices



To access the **Complete Diagram View**:

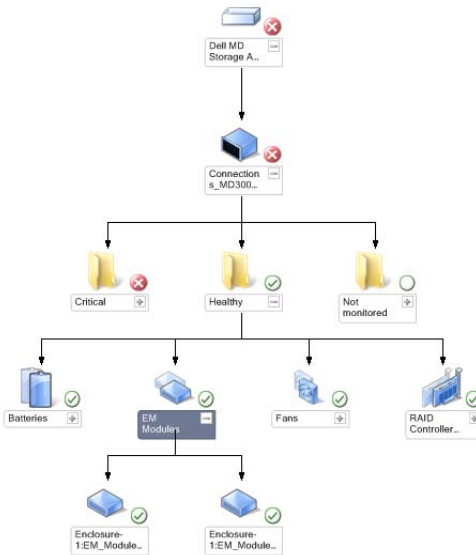
- 1 In the Operations Console, click **Monitoring**.
- 2 In the **Monitoring** pane on the left side, navigate to the **Dell** folder to display the different views.
- 3 Click **Diagram View**→**Complete Diagram View**.

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

MD Storage Array Diagram

The **Dell MD Storage Array Diagram** offers a graphical representation of all Dell MD3000/MD3000i and daisy-chained MD1000 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 MD Storage Arrays** group.

Figure 3-3. Graphical Representation of Dell MD Storage Arrays Managed by SCOM



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

To access the MD Storage Array Diagram:

- 1** In the Operations Console, click **Monitoring**.
- 2** In the **Monitoring** pane on the left side, navigate to the **Dell** folder and click the folder to display the different views.
- 3** Click **Dell Storage Array** → **Diagram View** → **MD Storage Array Diagram**.
- 4** Select a component in the diagram to view its details in the **Detail View** pane. View details of the following hardware components of MD Storage Arrays:
 - Batteries
 - Fans
 - Physical Disks
 - Power Supplies
 - RAID Controller Modules
 - Virtual Disks
 - Enclosures
 - Enclosure Management (EM) Modules

The MD Storage Array Management Pack does not monitor the following components of the storage arrays:

- Chassis
- Current Configuration
- Network Interfaces

The **MD Storage Array Diagram** view displays the above components under the **Not Monitored** group.



NOTE: Daisy-chained MD1000 is displayed as an extra enclosure in the diagram view.

State View

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






To access the **State View**:

- 1 In the Operations Console, click **Monitoring**.
- 2 In the **Monitoring** pane on the left side, navigate to the **Dell** folder and click the folder to display the different views.
- 3 Click **State View →MD Storage Array**.

The Operations Console displays the status of all the Dell 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.
	The service is unavailable.

Customizing the MD Storage Array Management Pack

Unit Monitors

You can customize the following parameters of the MD Storage Array 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 lists the various Dell unit monitors and the applicable parameters for your Dell MD Storage Arrays.

Table 3-2. Dell Monitors - MD Storage Arrays

Groups	Unit Monitor Name	Description	Default Periodic Poll Setting
MD Storage Array Device	Dell MD Array Device Status(Periodic)	Unit Monitor for all MD Storage Arrays: Tracks the global health status of the storage array.	4300 seconds (72 minutes)
MD Storage Array Batteries	Dell MD Array Battery Status(Periodic)	Unit Monitor for MD Storage Array Batteries: Indicates the health of the storage array's battery unit.	3900 seconds (65 minutes)
MD Storage Array Controller Modules	Dell MD Array Controller Status(Periodic)	Unit Monitor for MD Storage Array RAID Controller Modules: Indicates the health of the storage array's RAID Controller modules.	3800 seconds (63 minutes)

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

Groups	Unit Monitor Name	Description	Default Periodic Poll Setting
MD Storage Array Fans	Dell MD Array Fans Status(Periodic)	Unit Monitor for MD Storage Array Fans: Indicates the health of the storage array's fan.	4200 seconds (70 minutes)
MD Storage Array Physical Disks	Dell MD Array PhysicalDisk Status(Periodic)	Unit Monitor for MD Storage Array Physical Disks: Indicates the health of the storage array's physical disks.	3700 seconds (62 minutes)
MD Storage Array Power Supplies	Dell MD Array Power Supply Status(Periodic)	Unit Monitor for MD Storage Array Power Supplies: Indicates the health of the Storage Array's power supplies.	4100 seconds (68 minutes)
MD Storage Array VirtualDisks	Dell MD Array Volume Status(Periodic)	Unit Monitor for MD Storage Array Virtual Disks: Indicates the health of the Storage Array's Virtual Disks.	3600 seconds (60 minutes)
MD Storage Array Enclosures	Dell MD Storage Array Availability Rollup	Dependency Monitor for MD Storage Array Enclosures: Represents the worst case rollup of physical disk components under the enclosures.	
MD Storage Array EM Modules	Dell MD Array ESM Status(Periodic)	Unit Monitor for MD Storage Array EM Modules: Indicates the health of the Storage Array's EM Modules.	4000 seconds (67 minutes)

Object Discoveries

You can customize the following MD Storage Array 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).

Discovery Object	Description	Affected Groups
MD Storage Array Discovery	Discovers hardware components for your Dell MD3000 / MD3000i storage arrays and daisy-chained MD1000 storage arrays	<ul style="list-style-type: none">• MD Storage Array Batteries• MD Storage Array Chassis• MD Storage Array RAID Controller Modules• MD Storage Array Enclosures• MD Storage Array Fans• MD Storage Array Physical Disks• MD Storage Array Power Supplies• MD Storage Array Virtual Disks• MD Storage Array Current Configuration• MD Storage Array EM Modules• MD Storage Array Network Interfaces

Rules

Dell Systems Event Processing Rules

The MD Storage Array Management Pack processes rules from Storage Array events.

Storage Array

All critical events from the Storage Array are processed from a single event processing rule. The rule populates the events to the Windows® Operations Manager event log. There are separate rules that poll the events in the Windows event log and display the alerts accordingly.

The MD Storage Array events are polled at a default intervals of 3600 seconds (60 minutes) while creating MD Storage Array Alerts. The repeat count increases with every poll of the Storage Array log.

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.

- 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.**

Microsoft KB954049 available on the Microsoft support site at support.microsoft.com resolves this.

- 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.

