

**Dell PowerVault MD Storage Array Management Pack  
Suite Version 6.1 for Microsoft System Center  
Operations Manager  
User's Guide**



# Notes, cautions, and warnings

-  **NOTE:** A NOTE indicates important information that helps you make better use of your product.
-  **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
-  **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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# Overview

This document describes the activities that you can perform with the Dell MD Storage Array Management Pack Suite version 6.1 for Microsoft System Center Operations Manager.

The integration of Dell MD Storage Array Management Pack Suite version 6.1 with Microsoft System Center 2016 Operations Manager, Microsoft System Center 2012 R2 Operations Manager, Microsoft System Center 2012 SP1 Operations Manager, Microsoft System Center 2012 Operations Manager, or Microsoft System Center Operations Manager 2007 R2, environment allows you to manage, monitor, and also ensure the availability of the Dell PowerVault MD Storage Arrays.

**CAUTION:** To avoid data corruption, data loss, or both; perform the procedures in this document only if you have proper knowledge and experience in using Microsoft Windows operating system and Microsoft System Center 2016 Operations Manager, Microsoft System Center 2012 R2 Operations Manager, Microsoft System Center 2012 SP1 Operations Manager, Microsoft System Center 2012 Operations Manager, and Microsoft System Center Operations Manager 2007 R2.

**NOTE:** The term OpsMgr in this document is used to refer Microsoft System Center 2016 Operations Manager, Microsoft System Center 2012 R2 Operations Manager, Microsoft System Center 2012 SP1 Operations Manager, Microsoft System Center 2012 Operations Manager, and Microsoft System Center Operations Manager 2007 R2, unless otherwise specified.

Read the Dell MD Storage Array Management Pack Suite's release notes file, which contains the latest information about software and management server requirements, in addition to information about known issues. The release notes file is posted to the Systems Management documentation page on [dell.com/support/home](http://dell.com/support/home). The release notes file is also packaged in the self-extracting executable `Dell_MD_StorageArray_Management_Pack_Suite_v6.1_Axx.exe` (where xx is the Dell MD Storage Array Management Pack release number).

## What is new in this release

- Support for Microsoft System Center 2016 Operations Manager
- Support for latest firmware versions

## Key features of Dell MD Storage Array Management Pack Suite

**Table 1. Features and functionalities**


Feature	Functionality
Discovering and monitoring of Dell PowerVault MD Storage Arrays	<ul style="list-style-type: none"> <li>• Supports discovery and monitoring of Dell PowerVault MD Storage Array devices.</li> <li>• Manages the recovery failure events from the Dell MD Storage Arrays as alerts in the OpsMgr.</li> <li>• Displays complete inventory of an MD Storage Array in the OpsMgr's <b>Diagram View</b>.</li> </ul>

Feature	Functionality
	<ul style="list-style-type: none"> <li>Monitors the Dell PowerVault MD Storage Array devices for SNMP traps in OpsMgr consoles.</li> </ul>
Accessing Recovery Guru information	The management pack provides Recovery Guru information as a point of reference for troubleshooting the Dell MD Storage Array recovery failures. The recovery failures show up as alerts in the OpsMgr console. The Recovery Guru information appears in the Knowledge Base (KB) article associated with the alerts.

## Details of components modelled by Dell MD Storage Array Management Pack Suite

The following table lists the details and the components modelled by the Dell MD Storage Array Management Pack Suite.

**Table 2. Management packs and their details**

Management Pack	Details
Dell MD Storage Array Management Pack (Scalable)	<ul style="list-style-type: none"> <li>Discovers the Dell PowerVault MD Storage Array device and all its components.</li> <li>Disables the unit health monitors for the components under the Dell PowerVault MD Storage Array</li> <li>Disables individual component health under the Dell PowerVault MD Storage Array.</li> <li>Displays recovery failure events for a discovered Dell PowerVault MD Storage Array.</li> </ul>
Dell MD Storage Array Detailed Monitoring Overrides Management Pack (Detailed)	<ul style="list-style-type: none"> <li>Enables the unit monitors for the components discovered under a Dell PowerVault MD Storage Array.</li> <li>Displays the health of the following components in the <b>Diagram View</b>: <ul style="list-style-type: none"> <li>Volumes (Virtual Disks)</li> <li>Controllers</li> <li>EM Modules</li> <li>Physical Disks</li> <li>Fans</li> <li>Batteries</li> <li>Power Supplies</li> <li>Enclosure Health</li> <li>Enclosure Group Health</li> </ul> </li> </ul> <p> <b>NOTE: NIC, chassis, and firmware are not monitored in any configuration.</b></p>
Dell Storage MDStorage Array SNMP Management Pack (OpsMgr 2012 and 2016)	Displays the SNMP traps received from supported Dell PowerVault MD Storage Array devices for OpsMgr 2012 and 2016 consoles only.

## Dell recommendations for scalability

- If you have few Dell PowerVault MD Storage Arrays, then it is recommended to use the detailed edition of the management pack, otherwise, it is recommended to use the scalable edition of the management pack.
- Enable the **Autogrow option** on OpsMgr database to accommodate the increment in the transaction log size as the number of MD Storage Arrays increases.



- Ensure that you have a minimum of 5GB disk space or choose the required minimum disk space as per Microsoft's recommendation for your OpsMgr configuration.



# Using Dell MD Storage Array Management Pack Suite

This topic describes the various operations that you can perform on the OpsMgr using the Dell MD Storage Array Management Pack Suite.

The management pack suite enables you to:

- Discover and provide detailed inventory information of the Dell PowerVault MD Storage Arrays. For more information, see [Discovery](#).
- Monitor the health of the Dell PowerVault MD Storage Arrays and its components. For more information, see [Monitoring](#).
- Monitor the Dell PowerVault MD Storage Array devices for SNMP traps in OpsMgr consoles. For more information, refer *Dell PowerVault MD Storage Array Management Pack Suite Version 6.1 Installation Guide*.
- Launch Dell Discovery Utility through a console task to discover Dell PowerVault MD Storage Array devices. For more information, see [Launching the Dell Discovery Utility from the OpsMgr console](#).
- Customize parameters of the MD Storage Array Management Packs by using overrides. For more information, see [Customizing the Dell PowerVault MD Storage Array Management Packs](#).

## Discovery

To discover Dell PowerVault MD Storage Arrays in the network, an important pre-requisite is the IP listing file; `dell_MDStorageArray_ip.cfg` that contains the IP addresses of the Dell PowerVault MD Storage Arrays.

 **NOTE:** For information on `Dell_MDStorageArray_ip.cfg` file, see [Discovering Dell PowerVault MD Storage Arrays](#).

The default IP listing file, `Dell_MDStorageArray_ip_sample.cfg` is available on the management server where you have installed the Dell MD Storage Array Management Pack Suite. This file provides the reference format in which the IP addresses have to be provided in the IP listing file; `dell_MDStorageArray_ip.cfg`.

Dell PowerVault MD Storage Arrays discovered in MDSM can be monitored in OpsMgr by using the Dell PowerVault MDSM IP list extraction utility. This utility extracts the IP addresses of the Dell PowerVault MD Storage arrays into the file; `Dell_MDStorageArray_IPList.cfg`. This file has contents in a format that is recognized by Dell MD Storage Array Management Pack Suite. The contents of the output file obtained from the utility should be appended to the contents of the `Dell_MDStorageArray_ip.cfg` file. For more information on running the Dell PowerVault MDSM IP list extraction utility, see [Extracting Dell MD Storage Array IP addresses from Dell PowerVault Modular Disk Storage Manager](#).

## Discovering Dell PowerVault MD Storage Arrays


To discover Dell PowerVault MD Storage Arrays:

1. Run the **Dell Discovery Utility** and populate the IP listing file `Dell_MDStorageArray_ip.cfg` with the IP addresses of the Dell PowerVault MD storage arrays in the network.
 

 **NOTE:** If you use the default `Dell_MDStorageArray_ip_sample.cfg` file, then, override the sample config file and save it as `Dell_MDStorageArray_ip.cfg` file in the discovery override.
2. Import the **Dell MD Storage Array Management Packs (Dell.Storage.MDStorageArray.mp (Scalable) and Dell.Storage.MDStorageArray.DetailedMonitoringOn.mp (Detailed))** into the OpsMgr console depending on the number of Dell PowerVault MD Storage Arrays you want to monitor.



When you import the **Dell MD Storage Array Management Pack (Scalable)** into the OpsMgr console, the management pack scans the IP listing file at scheduled intervals to discover and monitor the Dell PowerVault MD Storage Arrays. The default schedule is 24 hours.

 **NOTE:** You can discover additional Dell PowerVault MD Storage devices by launching the Dell Discovery Utility. You can also launch the Dell Discovery Utility as a task. For more information, see [Launching the Dell Discovery Utility from the OpsMgr console](#).

The Dell MD Storage Array Management Pack performs two levels of discovery. The following lists the discoveries and the objects created by the discoveries.

**Table 3. Discovery and the objects created**

Discovery	Description	Objects Created
MD Storage Array Seed Discovery	Creates seed objects after getting the Dell PowerVault MD Array device IP details from the IP listing file. The seed objects are used to initiate the Dell PowerVault MD Storage Array Discovery.	MD Storage Array seed device.
MD Storage Array Discovery	Discovers hardware components for the Dell PowerVault MD storage arrays. The discovery uses the ABB toolset to contact the device and fetch the device inventory and failure information.	<ul style="list-style-type: none"> <li>• MD Storage Array Battery</li> <li>• MD Storage Array Power Supply</li> <li>• MD Storage Array RAID Controller Module</li> <li>• MD Storage Array Enclosure</li> <li>• MD Storage Array Fan</li> <li>• MD Storage Array Physical Disk</li> <li>• MD Storage Array Virtual Disk</li> <li>• MD Storage Array Enclosure Management Modules (EMM) Group</li> <li>• MD Storage Array Current Configuration</li> <li>• MD Storage Array Chassis</li> <li>• MD Storage Array Network Interfaces</li> </ul>



## Monitoring




The Dell MD Storage Array Management Pack Suite enables you to monitor the discovered Dell PowerVault MD Storage Array devices. The health status indicators help you to monitor the health of your Dell PowerVault MD Storage Array devices on the network.

### Health status indicators

The following table lists the icons that indicate the health status of the discovered Dell PowerVault MD Storage Array devices and their components in the OpsMgr console.

**Table 4. Severity level indicators**

Icon	Severity Level
	Normal/OK — The component is working as expected.
	Warning/Noncritical — 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.

Icon	Severity Level
	Critical/Failure/Error — The component has either failed or failure is imminent. The component requires immediate attention and may need to be replaced. Data loss may have occurred.
	The specific component is not monitored.
	The service is unavailable.

## Views

You can monitor the Dell PowerVault MD Storage Arrays using the following views:

- [Alerts Views](#)
- [Diagram Views](#)
- [State Views](#)

## Alerts Views

The Dell MD Storage Array **Alerts Views** displays the alerts for the recovery failures, and SNMP traps related to the Dell PowerVault MD Storage Arrays that you are monitoring.

To view the alerts for the Dell MD Storage Arrays:

1. In the OpsMgr console, click **Monitoring**.
2. Click **Dell** → **Alerts Views**

The following alerts are displayed:

- **MD Storage Array Alerts** — displays the alerts for the recovery failures related to the Dell PowerVault MD Storage Arrays.

 **NOTE: Dell MD Storage Array Not Supported by Dell MD Storage Array Management Pack Suite alert is displayed for Dell PowerVault MD Storage Array devices that are no longer supported by the Dell MD Storage Array Management Pack Suite.**

- **MD Storage Array SNMP Alerts** — displays the SNMP alerts from supported Dell PowerVault MD Storage Arrays.

3. Select any of the **Alerts Views**.

On the right pane of each of the individual **Alerts Views**, alerts that meet the criteria you specify, such as alert severity, resolution state, or alerts that are assigned to you are displayed.

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

## Accessing Recovery Guru information

The recovery guru is a component of Modular Disk Storage Manager (MDSM) that diagnoses critical events on the Dell PowerVault MD Storage Array and recommends step-by-step recovery procedures for problem resolution.

To access the Recovery Guru information:

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



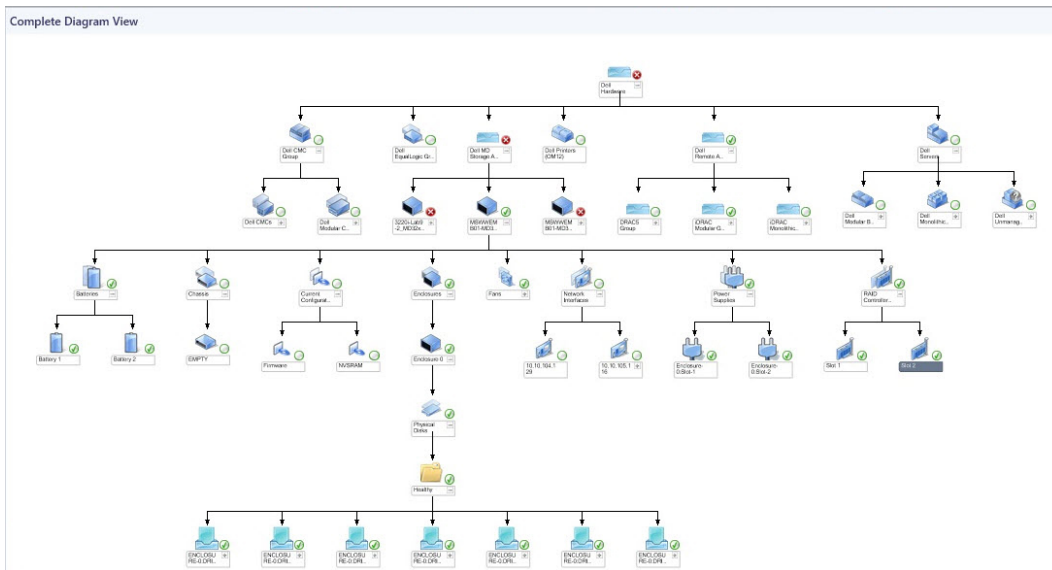
## Diagram Views

The **Diagram Views** displays a hierarchical and graphical representation of all Dell PowerVault MD Storage Arrays on your network. The Diagram view of the MD storage arrays displays the various components modeled by the Dell MD Storage Array management pack. The management pack creates the following views:

- **Complete Diagram View**
- **MD Storage Array Diagram**

### Complete Diagram View

The **Complete Diagram View** creates a graphical representation of all Dell devices that OpsMgr 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 1. Graphical representation of all Dell devices**

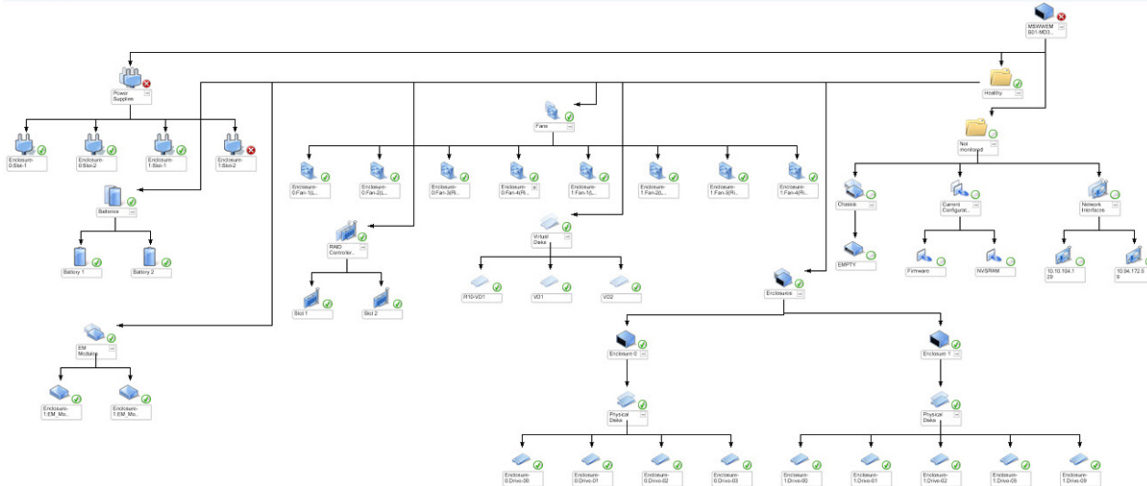
To access the **Complete Diagram View**:

1. In the OpsMgr console, click **Monitoring**.
2. In the **Monitoring** pane, navigate to the **Dell** folder and click the folder to display the different views.
3. Double-click **Dell** → **Diagram Views** → **Complete Diagram View**.
4. Select a component in the diagram to view the details in the **Detail View** pane.

### Dell MD Storage Array Diagram

The Dell **MD Storage Array Diagram** offers a graphical representation of all Dell PowerVault MD Storage Arrays that OpsMgr manages. You can expand and verify the status of individual devices, and their components in the diagram view. The root node for this view is the **Dell MD Storage Arrays** group.

You can also view the health status for the storage devices.



**Figure 2. Graphical representation of Dell MD Storage Arrays managed by OpsMgr**

To access the **Dell MD Storage Array Diagram** view:

1. In the OpsMgr, click **Monitoring**.
2. In the **Monitoring** pane, navigate to the **Dell** folder and click the folder to display the different views.
3. Double-click **Dell** → **Diagram Views** → **MD Storage Array Diagram**.
4. Select a component in the diagram to view the details in the **Detail View** pane.

View details of the following hardware components of Dell MD Storage Arrays:

- Batteries
- Chassis
- Current Configurations
- Enclosure Management Modules (EMM)
- Enclosures
- Fans
- Network Interfaces
- Physical Disks
- Power Supplies
- RAID Controller Modules
- Virtual Disks

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

- Chassis
- Current Configuration
- Network Interfaces

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

 **NOTE: EMMs are applicable only for daisy-chained MD Storage Arrays.**

## State Views

The **State Views** displays the status of each Dell device managed by the OpsMgr.

To access the **State Views**:

1. In the OpsMgr console, click **Monitoring**.
2. In the **Monitoring** pane, navigate to the **Dell** folder and click the folder to display the different views.



3. Click **Dell** → **State Views** → **MD Storage Array**.

 **NOTE:** This view can be personalized to include additional columns.

4. Select a device to view the details in the **Detail View** pane.

## Tasks

 **NOTE:** Create new tasks to launch the application if the program is not installed in the default location. For more information, see [Appendix A - Enabling External Program Tasks](#).

### Launching the Dell Discovery Utility from the OpsMgr console

 **NOTE:** Local administration privilege is required to launch Dell Discovery Utility.

You can launch the Dell Discovery Utility through a console task. Console tasks are available in the **Actions** or **Tasks** pane of the OpsMgr console. When you select a device or a component in any of the Dell **Diagram Views**, the relevant tasks appear in the **Actions** or **Tasks** pane.

To launch the Dell Discovery Utility:

1. In the OpsMgr console, click **Monitoring**.
2. In the **Monitoring** pane, click **Dell** → **Diagram Views**.
3. In the **Diagram Views**, select either the **Complete Diagram View** or the **MD Storage Array Diagram**.
4. Click **Launch Dell Discovery Utility** under **Dell MD Storage Arrays Tasks** in the **Actions** or **Tasks** pane.

 **NOTE:** Dell PowerVault MD Storage Arrays that are added to the IP listing file will be discovered in the next discovery cycle of the MD Storage Array Seed Discovery and then in the MD Storage Array Discovery.

## Customizing the Dell MD Storage Array Management Pack

You can customize the following Dell MD Storage Array Management Pack discovery parameters, using the following overrides:

- **Enabled** — Allows you to enable or disable. You can set the **Override Setting** to **True** or **False**.
- **Interval In Seconds** — The frequency (in seconds) with which the Dell MD Storage Array Management Pack discovers the component instance and attributes of your Dell device. The default value for this attribute is 86,400 seconds or 3600 seconds depending on the parameters.
- **IP Config File Path** — Override this parameter if you are using a different file or folder location. By default, the IP listing file is at **C:\Program Files\Dell Management Packs\MDStorage Array Mgmt Suite\6.1\Library**. For more information on configuring the IP listing file, see the "Preimport Tasks" section in the *Dell MD Storage Array Management Pack Suite Version 6.1 for Microsoft System Center Operations Manager Installation Guide*. The Installation guide is packaged in the self-extracting executable **Dell\_MD\_StorageArray\_Management\_Pack\_Suite\_v6.1\_Axx.exe** file. You can download the executable from [dell.com/support/home](http://dell.com/support/home).

 **NOTE:** You can specify the override parameters in the **Authoring** pane of the OpsMgr console.

### Object discoveries

To specify override parameters for object discoveries:

1. In the OpsMgr console, click **Authoring**.
2. In the **Authoring** pane, select **Management Pack Objects** → **Object Discoveries**.
3. Select **MD Storage Array Seed Discovery** → **Dell MD Storage Array Seed Discovery**.

 **NOTE:** You may need to change the scope to locate the discovery.

4. Right-click the object discovery you want to override and select **Overrides** → **Override the Object Discovery**.
5. Check the appropriate discovery parameter that you want to override and set its **Override Value**.
6. Save the Override settings in a new management pack.

7. Click **Apply**.
8. Similarly select **Dell MD Storage Array Discovery** under the **MD Storage Array Seed Discovery group** object and repeat step 4 to step 7 to override its discovery interval.

## Unit monitors

The following table provides information for the various unit monitors and the applicable parameters for the Dell PowerVault MD Storage Arrays.

Component	Unit Monitor Name	Description	Default Time Interval
MD Storage Array State Information	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)
Dell MD Array Battery	Dell MD Array Device Status (Periodic)	Unit Monitor for MD Storage Array Batteries: Indicates the health of the storage array battery unit.	3600 seconds (60 minutes)
Dell MD Array Chassis	Unmonitored	None.	None
Dell MD Array Fan	Dell MD Array Fans Status (Periodic)	Unit Monitor for MD Storage Array Fans: Indicates the health of the storage array fan.	3600 seconds (60 minutes)
Dell MD Array Network Interface	Unmonitored	None.	None
Dell MD Array Physical Disk	Dell MD Array Physical Disk Status (Periodic)	Unit Monitor for MD Storage Array Physical Disks: Indicates the health of the storage array physical disks.	3600 seconds (60 minutes)
Dell MD Array Power Supply	Dell MD Array Power Supply Status (Periodic)	Unit Monitor for MD Storage Array Power Supplies: Indicates the health of the storage array power supplies.	3600 seconds (60 minutes)
Dell MD Array RAID Controller	Dell MD Array Controller Status (Periodic)	Unit Monitor for MD Storage Array RAID Controller Modules: Indicates the health of the storage array RAID controller modules.	3600 seconds (60 minutes)
Dell MD Array Virtual Disk	Dell MD Array Volume Status (Periodic)	Unit Monitor for MD Storage Array Virtual Disks: Indicates the health of the storage array virtual disks.	3600 seconds (60 minutes)
Dell MD Array Enclosure Service Modules	Dell MD Array ESM Status (Periodic)	Unit Monitor for MD Storage Array EMM: Indicates the health of the storage array EMM.	3600 seconds (60 minutes)
Dell MD Array Batteries Group	Dell MD Storage Array Availability Rollup	Dependency Monitor for MD Storage Array Batteries: Represents the consolidated health of the batteries.	None



<b>Component</b>	<b>Unit Monitor Name</b>	<b>Description</b>	<b>Default Time Interval</b>
Dell MD Array Chassis Group	Unmonitored	None.	None
Dell MD Array Current Configurations Group	Unmonitored	None.	None
Dell MD Array Enclosure	Dell MD Storage Array Availability Rollup	Dependency Monitor for MD Storage Array Enclosures: Represents the consolidated health of the physical disk components under the enclosures.	None
Dell MD Array EM Modules Group	Dell MD Storage Array Availability Rollup	Dependency Monitor for MD Storage Array Enclosure Management Modules: Represents the consolidated health of the physical disk components under the enclosures.	None
Dell MD Array Enclosures Group	Dell MD Storage Array Availability Rollup	Dependency Monitor for MD Storage Array Enclosures Group: Represents the consolidated health of the enclosures.	None
Dell MD Array Fans Group	Dell MD Storage Array Availability Rollup	Dependency Monitor for MD Storage Array Fans: Represents the consolidated health of the fans.	None
Dell MD Array Network Interface Group	Unmonitored	None.	None
Dell MD Array Physical Disk Group	Dell MD Storage Array Availability Rollup	Dependency Monitor for MD Storage Array Physical Disks: Represents the consolidated health of the physical disk components under the enclosures.	None
Dell MD Array Power Supplies Group	Dell MD Storage Array Availability Rollup	Dependency Monitor for MD Storage Array Power Supplies: Represents the consolidated health of the power supplies.	None
Dell MD Array RAID Controller Modules Group	Dell MD Storage Array Availability Rollup	None.	None
Dell MD Array Virtual Disks Group	Dell MD Storage Array Availability Rollup	Dependency Monitor for MD Storage Array Virtual Disks: Represents the consolidated health of the virtual disks on the storage array.	None


## Customizing unit monitors

You can customize the following parameters of the Dell MD Storage Arrays Management Pack unit monitors by using the following overrides:

- **Enabled** — Allows you to enable or disable monitors. You can set 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 PowerVault MD Storage Array device to check the health of a component. The default setting for monitors could range between 3600 - 4300 seconds.


## Specifying override parameters for unit monitors

To specify override parameters for unit monitors:

1. In the OpsMgr console, click **Authoring**.
2. In the **Authoring** pane, select **Management Pack Objects** → **Monitors**.  
 **NOTE: You may need to change scope to locate the unit monitors.**
3. Right-click the component unit monitor you want to override and select **Overrides** → **Override the Monitor**.
4. Check the appropriate monitor parameter that you want to override and set its **Override Value**.
5. Save the override settings in a new management pack.
6. Click **Apply**.

## Extracting Dell MD Storage Array IP addresses from Dell PowerVault Modular Disk Storage Manager

The `Dell_MDStorageArray_ExtractMDListFromMDSM.vbs` is a VB script that is packaged in the Dell MD Storage Array Management Pack Suite. This script helps in extracting and saving the IP addresses of Dell PowerVault MD Storage Arrays managed by the Dell PowerVault Modular Disk Storage Manager (MDSM) so that they can be managed in the OpsMgr. Run this script as an administrator from a command prompt on a system where MDSM is installed. The IP addresses are saved in the format required by the Dell MD Storage Array Management Pack Suite. For the Dell PowerVault MD Storage Arrays to be discovered and monitored on the SCOM Management Server (OpsMgr machine), copy the saved file containing the IP addresses to the OpsMgr machine and add the contents of the file to the `dell_MDStorageArray_ip.cfg` file present in the OpsMgr machine.

-  **NOTE: Run the script as an administrator because the script invokes smclient.exe (installed with MDSM) to retrieve the list of IP addresses, and smclient.exe requires elevation (run as Administrator) when run from the installed folder.**



## Related documentation and resources

This topic gives the details of the documents and references to help you work with the Dell MD Storage Arrays Management Pack Suite.

### Microsoft guidelines for performance and scalability for Operations Manager

For information on recommendations from Microsoft:

- See [technet.microsoft.com/en-US/library/hh473583.aspx](http://technet.microsoft.com/en-US/library/hh473583.aspx) for *Planning the System Center 2012 — Operations Manager Deployment*.

 **NOTE: For optimal performance, deploy device-specific Dell Management Packs on different management servers.**

 **NOTE: For improved performance, make sure that the Autogrow Option is enabled in the OpsMgr Data Warehouse and/or Database.**

### Other documents you may need

Besides this User's Guide, you may need to refer to the following guides available at [dell.com/support/home](http://dell.com/support/home).

- *The Array Tuning Best Practices for your Dell PowerVault MD Storage Array*
- *The Support Matrix For Your Dell PowerVault MD Storage Array*
- *The Hardware Owner's Manual For Your Dell PowerVault MD Storage Array*
- *The Dell PowerVault Modular Disk Storage Manager User's Guide*

### 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](http://dell.com/training). This service might not be offered in all locations.


### Accessing documents from the Dell EMC support site

You can access the required documents in one of the following ways:

- Using the following links:
  - For all Dell EMC Enterprise Systems Management documents — [Dell.com/SoftwareSecurityManuals](http://Dell.com/SoftwareSecurityManuals)
  - For Dell EMC OpenManage documents — [Dell.com/OpenManageManuals](http://Dell.com/OpenManageManuals)
  - For Dell EMC Remote Enterprise Systems Management documents — [Dell.com/esmmanuals](http://Dell.com/esmmanuals)
  - For iDRAC and Dell EMC Lifecycle Controller documents — [Dell.com/idracmanuals](http://Dell.com/idracmanuals)
  - For Dell EMC OpenManage Connections Enterprise Systems Management documents — [Dell.com/OMConnectionsEnterpriseSystemsManagement](http://Dell.com/OMConnectionsEnterpriseSystemsManagement)

- For Dell EMC Serviceability Tools documents — [Dell.com/ServiceabilityTools](http://Dell.com/ServiceabilityTools)
- For Client Command Suite Systems Management documents — [Dell.com/DellClientCommandSuiteManuals](http://Dell.com/DellClientCommandSuiteManuals)
- From the Dell EMC Support site:
  - a. Go to [Dell.com/Support/Home](http://Dell.com/Support/Home).
  - b. Under **Select a product** section, click **Software & Security**.
  - c. In the **Software & Security** group box, click the required link from the following:
    - **Enterprise Systems Management**
    - **Remote Enterprise Systems Management**
    - **Serviceability Tools**
    - **Dell Client Command Suite**
    - **Connections Client Systems Management**
  - d. To view a document, click the required product version.
- Using search engines:
  - Type the name and version of the document in the search box.

## Contacting Dell

 **NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.**

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit [dell.com/support](http://dell.com/support).
2. Select your support category.
3. Verify your country or region in the **Choose a Country/Region** drop-down menu at the top of page.
4. Select the appropriate service or support link based on your need.



# Troubleshooting

## Issues and resolutions

The following table lists the known issues and resolutions.

**Table 5. Known issues and resolutions**

Issue	Resolution
Under certain conditions, alerts related to <b>Handle Count Threshold</b> and <b>Private Bytes Threshold</b> are displayed on the OpsMgr console of the management server.	Microsoft <b>KB968760</b> available at <a href="http://support.microsoft.com">support.microsoft.com</a> resolves this issue.
Under certain conditions, an error message is displayed on the OpsMgr console of the management server with the Event ID — <b>623</b> and Event Source — <b>Health Service ESE Store</b> .	Microsoft <b>KB975057</b> available at <a href="http://support.microsoft.com">support.microsoft.com</a> resolves this issue.
The OpsMgr 2007 R2 console may crash on certain operating systems.	Microsoft <b>KB951327</b> and <b>KB951526</b> available at <a href="http://support.microsoft.com">support.microsoft.com</a> resolves this issue.
You may experience one or more of the following situations: <ul style="list-style-type: none"> <li>• The web console does not open.</li> <li>• The <b>My Workspace</b> page does not display.</li> <li>• <b>Performance</b> and <b>Power Monitoring</b> views do not display.</li> <li>• <b>Health Service</b> may not start up on the system.</li> </ul>	Microsoft <b>KB954049</b> available at <a href="http://support.microsoft.com">support.microsoft.com</a> resolves this issue.
The reports do not appear as expected in the <b>Reporting</b> space of the <b>Administration</b> console.	Microsoft <b>KB954643</b> available at <a href="http://support.microsoft.com">support.microsoft.com</a> resolves this issue.
The OpsMgr console intermittently displays the following error message — <code>Health service Host Process encountered a problem and needed to close</code> as a result of this Health Service crash. You may notice unexpected behavior in the discovery and monitoring of Dell devices.	Microsoft <b>KB951526</b> available at <a href="http://support.microsoft.com">support.microsoft.com</a> resolves this issue.
OpsMgr 2007 R2 cannot receive SNMP trap data when you use a Microsoft Windows Server 2008 based computer or a Microsoft Windows Vista based computer as a proxy agent for SNMP devices.	Microsoft <b>KB958936</b> available at <a href="http://support.microsoft.com">support.microsoft.com</a> resolves this issue.

## Appendix a — enabling external program tasks

Install Dell MD Storage Array Management Pack Suite's tasks that launch external programs, in the default location.

### Creating a console launch task for Dell Discovery Utility in OpsMgr 2012 R2

To create a console launch task for Dell Discovery Utility in OpsMgr 2012 R2:

1. In the OpsMgr console, click **Authoring**.
2. In the **Authoring** pane, click **Management Pack Objects** → **Tasks**.
3. Right-click **Tasks** and click **Create a New Task**.  
The **Select a Task Type** window is displayed.
4. Under **Console Tasks**, click **Command line**.
5. Under **Select destination management pack** drop-down menu, select the destination management pack.
6. Click **Next**.  
The **General Properties** window is displayed.
7. Enter the **Task name**, **Description**, and select **Dell MD Storage Arrays** as the Task Target and click **Next**.  
The **Command Line** screen is displayed.
8. Enter the path of the application **Registry Editor** appended with `\Library\DellDiscoveryUtility.exe` in the **Application** textbox.  
For example: `D:\Program Files\Dell Management Packs\MDStorage Mgmt Suite\6.1\Library\DellDiscoveryUtility.exe`.

To obtain the path of the **Registry Editor**:

- a. Click **Start** and then, click **Run...**
  - b. Enter `regedit` in the **Open** textbox, and click **OK**.  
The **Registry Editor** window is displayed.
  - c. Click **Computer** → **HKEY\_LOCAL\_MACHINE**.
  - d. Click **SOFTWARE** → **Dell** → **Dell MD Storage Array Management Pack Suite**.  
The **Registry Editor** path is displayed in the right pane.
9. Click **Create**.

