

Monitoring Dell PowerVault MD Series Storage Arrays Using Dell SupportAssist

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Introduction

Dell SupportAssist is a remote support application providing proactive support capabilities that help identify and resolve issues faster and more accurately. It integrates with Dell OpenManage Essentials and enables transparent visibility to your server, storage, and networking infrastructure, and proactively identifies hardware failures in your IT environment.

SupportAssist is designed with automated proactive features to help streamline support process steps, maintain your systems' health, and identify hardware failures faster and more accurately.

The key features of SupportAssist include:

- Remote monitoring for critical hardware alerts.
- Automatic collection of diagnostic logs and configuration information.
- Automatic case creation and alert notifications through email.
- Proactive support from a ProSupport Engineer, who has the information required to start resolving your case immediately.

SupportAssist gives you more oversight and control over your environment without the hassle of manual processes and more time. Equipping your OpenManage Essentials server with SupportAssist is voluntary, and results in improved support, products, and services designed to meet your needs.

OpenManage Essentials interacts with supported devices that are to be monitored and receives SNMP traps. The SNMP traps are periodically retrieved as alerts by the SupportAssist client. The alerts are filtered using various policies to decide if the alerts qualify for creating a new support case or updating an existing support case.

All qualifying alerts are securely sent to the SupportAssist server hosted by Dell, for a creating a new support case or updating an existing support case. After the support case is created or updated, the SupportAssist client runs the appropriate collection tools on the devices that generated the alerts, and uploads the log collection to Dell.

The information in the log collection is used by Dell technical support to troubleshoot the issue and provide an appropriate solution.

This technical white paper provides information about monitoring Dell PowerVault MD Series storage arrays using Dell SupportAssist. The following are the high-level areas covered:

- Steps to perform discovery and inventory
- Configuring device credentials in SupportAssist
- Alert processing
- Automatic case creation for an alert
- Sending system logs manually

1 Discovery and inventory

Discovery and inventory aids understanding of what hardware and software are installed across your organization and is the most basic step to effective systems management. Areas such as license compliance, health monitoring, security and upgrades, and migrations all require the networked hardware to be available to the System Administrator on a single console to help ease the process. OpenManage Essentials provides these capabilities to initialize the discovery and inventory process and perform required actions on these devices.

1.1 Prerequisites

The following are the prerequisites for performing discovery and inventory:

Credentials: The discovery process in OpenManage Essentials communicates with the PowerVault MD storage arrays using SNMP protocol. You may also be required to provide the SNMP community string during the discovery process.

Setting up the system to be managed: There are a few settings to be performed on the managed nodes to make them discoverable over the network. For more infomation, see the *Making Your Environment Manageable with Dell OpenManage Essentials* technical whitepaper at **delltechcenter.com/ome**.

Dell PowerVault Modular Disk Storage Manager: PowerVault MD Storage Manager must be installed on the management station to allow the Dell Lasso tool to generate the log collection. You can download the appropriate PowerVault MD Storage Manger at **dell.com/support**.

1.2 Discovery range configuration

This section provides information about providing a discovery range for discovering devices in OpenManage Essentials.

- In OpenManage Essentials, navigate to Manage → Discovery and Inventory. The Discovery Range Summary page is displayed.
- 2. Under Discovery Ranges, right-click All Ranges, and click Add Discovery Range.



DELL OPENMANAGE ESSENTIALS	C LINER I ADDIT 1
Home Manage Reports Prefer Discover Devices 20 Devices Devices Devices Discovery Partal 1/10 Discovery Portal Discovery Range 0 1/10 1/10 Discovery Portal Discovery Range Common Tasks 1/10 1/10 Add Discovery Range Configuration Specify IP address, range, or host name. 1/10 Add Discovery Range SiteP Configuration Specify IP address or a range. The first octet cannot be zero. Specify a range (for example, 12-115) or wildcard(*) in the last two octets. Discovery Range Mit Configuration IP address / range: + + Name : Subnet mask: 255 + 255 + 0 Add Remove Import Inventory Schedule IPM Configuration Storage Configuration Subnet mask: 255 + 255 + 0 Add Remove Import Exclude Ranges IPM Configuration IP address / range IP addres	

Figure 1 Discovery Range Wizard

3. Specify the IP ranges of the devices in the environment. The following are examples of valid IP ranges that you can provide.

	193.109.112.*
	193.104.20-40.*
IP Range	192.168.*.*
	192.168.2-51.3-91
	193.109.112.45-99
Hostname	WIN-17L2JS8
Single IP	193.109.112.99

Figure 2 Sample IP ranges

Additionally, an Import functionality provided in OpenManage Essentials helps with importing a Discovery Range which is defined in a .csv file format, as shown in Figure 3. The maximum numbers of devices that can be imported using this method is 500.

Name	Туре	Data
1750-win-r03-03	Host (A)	10.94.172.180
1750-win-r04-02	Host (A)	10.94.172.184
1850-win-r04-05	Host (A)	10.94.172.179
2650-win-r01-04	Host (A)	10.94.172.193
2800-W2K3	Host (A)	10.94.168.32
2850-win-r01-03	Host (A)	10.94.161.71
2900-win-r03-07	Host (A)	10.94.161.72
2970-esx	Host (A)	10.94.168.203
4600-WIN-R04-14	Host (A)	10.94.172.168

Figure 3 Sample .csv file

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2 Discovering PowerVault MD storage arrays

To discover PowerVault MD storage arrays:

- i. In the **IP address/range** field, type the IP address range.
- ii. In the **Name** field, provide a range name (optional).
- iii. Click Add.

NOTE: If required, repeat step i to step iii to add more discovery ranges.

iv. Click **Next** to proceed.

Discover Devices						23
Discovery Range Configurat	tion Discove	ry Range Configuration				1/10
Discovery Range Configuration	Specify IP	address, range, or host n	ame.			
ICMP Configuration	Enter an IP add	ress or a range. The first octet c	annot be zero. Speci	fy a range (for exampl	le, 12-115) or v	vildcard(*) in
SNMP Configuration	 IP address / 	range: 10 . 94	. 178 . 89	Name : Printer		
Storage Configuration	O Host name:			 i	ii	
WS-Man Configuration	Subnet mask:	255 . 255	. 255 . 0			
SSH Configuration				Add	Remove	Import
IPMI Configuration	IP Range / Hos	st Name Discovery Range Name	e Subnet Mask			
Discovery Range Action	10.94.168.*	Range_Server	255.255.255.0			
Summary						
					11/	
	L				IV	
Help				Cancel	Next	Finish

Figure 4 Specifying an IP range

2.1.1 SNMP configuration

- i. In the SNMP Configuration screen, select the **Enable SNMP discovery** option.
- ii. Type the community name in the **Get community** field.
- iii. Click **Next** to proceed with the default settings until the **Storage Configuration** screen.

Discovery Range Configuration SNMP Configuration Discovery Range Configuration Specify the SNMP settings for discovery. ICMP Configuration Imable SNMP discovery: SNMP Configuration Imable SNMP discovery: Storage Configuration Imable SNMP discovery: WMI Configuration Imable SNMP discovery: Storage Configuration Imable SNMP discovery: Storage Configuration Imable Storage Configuration SSH Configuration Image Seconds Retries: 2 Image attempts IPMI Configuration Image Seconds Discovery Range Action Image Seconds	22
Discovery Range Configuration Specify the SNMP settings for discovery. ICMP Configuration Image: Configuration SNMP Configuration Image: Configuration WMI Configuration Set community: Storage Configuration Set community: WS-Man Configuration Image: Configuration SSH Configuration Image: Configuration IPMI Configuration Image: Configuration Discovery Range Action Image: Configuration	3/10
	<u>?</u>
Summary .	Ficiality

Figure 5 SNMP Configuration

2.2 Storage configuration

i. In the Storage Configuration screen, select Enable Power Vault MD array discovery.

Discover Devices		23
Discovery Range Configurati	ion Storage Configuration	5/10
Discovery Range Configuration	Select these check-boxes if you have PowerVault Modular Disk or Dell/EMC devices in this discovery range.	?
SNMP Configuration	Enable PowerVault MD array discovery:	
WMI Configuration Storage Configuration	Enable Dell/EMC array discovery: Dell/EMC user name:	
WS-Man Configuration	Dell/EMC password:	
IPMI Configuration	Dell/EMC port: 443	iseccli eve)
Discovery Range Action Summary	on management stations. For additional setup information on AX model storage products, refer to onli	ine help.
Help	Cancel Back Next	Finish

Figure 6 Storage Configuration

- ii. Click **Next** to proceed with the default settings until the **Discovery Range Action** screen.
- iii. In the **Discovery Range Action** screen, select one of the options, and click **Finish**.



Discover Devices					
Discovery Range Configuration	Discovery Range Action 9/10				
Discovery Range Configuration St ICMP Configuration SNMP Configuration WMI Configuration Storage Configuration	pecify to initiate discovery, inventory, or both				
WS-Man Configuration SSH Configuration IPMI Configuration Discovery Range Action Summary	Do not perform discovery or inventory. Perform only discovery. Perform both discovery and inventory.				
Help	Cancel Back Next Finish				

Figure 7 Dicovery Range Action

The discovery range you provided is added to the **Discovery Ranges** list, and the discovered PowerVault MD storage array is displayed in OpenManage Essentials.



Figure 8 PowerVault MD storage array discovered in OpenManage Essentials

3

Configuring the PowerVault MD storage array to send alerts to OpenManage Essentials

To configure alerts for PowerVault MD Series storage arrays, the MD Storage Manager tool, which is the Management tool for PowerVault MD Series storage arrays, should be installed. After the tool is installed, perform the following steps to set the trap destination.

- i. On the management server, click Start \rightarrow All Programs \rightarrow Dell \rightarrow MD Storage Manager.
- ii. Click the Edit tab and select Add storage array.
- iii. Provide the controller IP of the PowerVault MD storage array and click Add.

🌒 Add New Storage Array - Manual				
D¢/LL				
What are in-band and out-of-band management connections?				
What if my system only has one RAID controller module?				
Select a management method:				
 Out-of-band management: Manage the storage array using the RAID controller module Ethernet connection 				
RAID Controller Module (DNS/Network name, IPv4 address, or IPv6 address):				
RAID. Controller Medule (DNS/Network name - IBu4 address, or IBu6 address)				
RAID CONTOIR MOULE (DISDIVERWORK Halle, 1PVF address), or 1PV0 address),				
O In-band management: Manage the storage array through an attached host.				
Host (DNS/Network name, IPv4 address, or IPv6 address):				
Add Cancel Help				

Figure 9 Adding the storage array in the Storage Manager

L

iv. Once the storage array is discovered, right-click the storage array, and select **Configure Alerts**.



Devices Setup		
⊡~ 🖳 WIN-PI8E8JUD0FQ		Name
🗄 📲 Discovered Storage	Arrays	Unnamed
🔥 🗸 Storage Array	/ Unnamed	
	Manage Storage Array	
	Blink Storage Array	
	Execute Script	
	Load Storage Array Coofi	guration
	Lload Storage Array Contr Lloadade RAID Coptroller I	Modulo Eirennara
	opgrade RAID Controller	module Firmware
	Refresh	
	Remove	•
	Configure Alerts	
	Rename	
	Comment	
-		

Figure 10 Configuring alerts

- v. Click the **SNMP** tab.
- vi. In the **Community name** field, provide the community string.
- vii. In the **Trap destination** field, provide the IP address of the management server running OpenManage Essentials.
- viii. To check if the storage array is configured correctly to send traps to OpenManage Essentials, click **Test.** A test trap is sent to OpenManage Essentials.



Mail Server Email SNMP	
Alerts for: Unnamed	
Configured SNMP addresses:	
Community Name	Trap Destination
public	10.94.217.25
,	
Community name (maximum 20 characters):	
- public	
[public	
The detriction (both series TD-4 address on TD-4	
Trap destination (nost name, 1994 address, or 1996	address):
10.94.217.25	
10.94.217.25	

Figure 11 Adding the community string and trap destination in the Storage Manager



4 Configuring SupportAssist

After successful discovery of the PowerVault MD storage array in OpenManage Essentials, the PowerVault MD storage array is displayed in the **Devices** tab in SupportAssist.

Cases	Devices Settings Updates A	dvanced			
Device Inv	rentory				?
Edit Device Credentials Send System Logs			ce Name 🗸	Apply Filters Clear Filters	ି ୯
	Device Name 🔺	Device Type	Service Tag	Collection Status	
	10.94.216.76	PowerVault Storage Device	897672S	Collection Scheduled	

Figure 12 Devices tab

To run collection tool on a PowerVault MD Series storage array, SupportAssist uses the credentials from the MD Storage Manager tool.



5 Alerts in OpenManage Essentials

Dell OpenManage Essentials administrators can monitor the health of discovered assets through a centralized, easy-to-use dashboard and through automated, custom alerts. The dashboard provides an at-a-glance view and a scoreboard displaying the health and well-being of the infrastructure.

5.1 Alert threshold

The alert threshold specifies under what conditions the alert should cause a support case to be created (or appended). The syntax resembles a programming method and optionally may take additional arguments to refine its behavior.

Currently there are two possible values:

- FirstMatch () The case should be created/appended each time this alert is detected.
- Occurs (count, duration) The case should be created/appended only when the alert has occurred so many times within a specified duration.

The duration argument of the Occurs threshold defines a relative time in days, hours, minutes, and seconds and is formatted as dd-hh:mm:ss. The following are some examples of the Occurs threshold and their descriptions.

Example	Description
Occurs (5,1-00:00:00)	Create/append case if the alert occurs 5 or more times within the previous 1 day
Occurs (3,0-05:00:00)	Create/append case if the alert occurs 3 or more times within the previous 5 hours
Occurs (8,1-12:00:00)	Create/append case if the alert occurs 8 or more times within the previous day and a half

Table 1 Examples of Occurs threshold

Valid duration values – Days: 0 to 365, Hours: 0 to 23, Minutes: 0 to 59, Seconds: 0 to 59

Policies which specify the Occurs() threshold instruct the SupportAssist server to retain the timestamps of each alert. With each new alert occurrence, the SupportAssist server evaluates if the number of alerts within the duration exceeds the count, and if so, creates/appends the case. The timestamps are discarded to ensure the Occurs() threshold will not append the case until an entirely new set of alerts are received which fulfills the criteria.

Table 2	Examples	of Policv	file	details
	Examples	0110000		accance

Policy Property	Description	Example
clientType	Type of client reporting the alert	"OME"
eventSourceType	Source of the alert	".1.3.6.1.4.1.674.10893.2.30"
trapld	Trap identifier	"1"
eventId	Event identifier	"226C"
severity	Severity of the alert	"CRITICAL_EVENT"
description	Description of the alert	"Physical Disk Failed
autoCase	Indicates if the alert should be processed	True
alertThreshold	Policy filter used when a case is created	"FIRST MATCH()"
deltaSeverity	Severity code passed to delta.	"3"

SupportAssist processes all alerts with PowerVault MD Series storage array OIDs, but only some specified alerts which have Auto Case as "Yes" are considered for creating a support case (Service Requests or SR).

All critical alerts are displayed in OpenManage Essentials.

Drag a column neader and drop it here to group by that column							
Severity 🍸	Acknowledged \mathbb{Y}	Time 🛛 🕅	Device 🍸	Details			
8		10/14/2012 10:58:16 AM	1 10.94.216.76	Dell MD Array Storage Alert: Oct 14, 2012 10:58			
8		10/14/2012 10:58:16 AM	1 10.94.216.76	Dell MD Array Storage Alert: Oct 14, 2012 10:58			
8		10/14/2012 10:57:59 AM	1 10.94.216.76	Dell MD Array Storage Alert: Oct 14, 2012 10:58			
8		10/14/2012 10:43:49 AM	1 10.94.216.76	Dell MD Array Storage Alert: Sun, 14 Oct 2012 1			

Figure 13 Critical alerts from PowerVault MD Series storage arrays

Automatic case creation and execution of the collection tool

SupportAssist processes all alerts from OpenManage Essentials, but a support case is created only if:

• The policies qualify the alert for a support case creation.

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• SupportAssist is configured to automatically generate support cases.

Once the support case is created for an PowerVault MD Series storage array, the corresponding collection tool (Dell Lasso) is invoked, and the system log collection is generated and uploaded to Dell.

NOTE: For devices covered under Basic Support service contract type, the support case is not created, but the collection tools are invoked.

Devices Cases									
Case List	Case List								
Fitter By: Ca	Filter By: Case Number 🔽 Apply Filters Clear Filters								
Case Status	Case Number	Case Title	Progress	Senvice Contract	Device Type	Service Tag	Date Opened 🔻		
Submitted	800615557	WCG: OWE FA Sent when a failure has been detected on any of the power supplys in the PSA. The implementation of this trap should not send more	Troubleshooting Tool Failed to Run	ProSupport	Storage	55H892S	12/28/2012 2:53 AM		
Display Cases:					R - 44 Page 1	of1 → H			

Figure 14 Support case created for a PowerVault MD storage array



7 Scheduling periodic collection

By default, SupportAssist generates the system log collection from PowerVault MD storage arrays every week and uploads the system log collection to Dell. You can modify the frequency at which the system log collection is generated based on your preference.

To schedule the periodic collection:

- i. Click the **Settings** tab.
- ii. Under Edit Device Type Credentials, select Device Type as Storage and Credential Type as MDSeries.
- iii. Under System Log Collection Schedule, select the frequency, date, and time as required.
- iv. Click Save Changes.

Cases Devices	Settings i					
Settings	0					
System Logs	Default Device Type Credentials SupportAssist requires the Administrator credentials of each Device Type to collect system logs. These credentials are encrypted and saved locally.					
The Default Device Type Credentials are used to collect system logs, unless you edit the device-specific credentials in the Devices tab. Proxy Settings NOTE: If the device credentials are changed, ensure that you update the changes to the Default Device Type Credentials as well. NOTE: The device credentials are not required to collect system logs on DellPowerVault MD series storage devices. Edit Device Type Credentials						
Preferences	Device Type Storage Credential Type MDSeries					
Contact Information	System Log Collection Schedule How do I turn on/off scheduling for all devices?					
	Specify day and time The First I Mon I at 12:00 AM I of every 1 I month(s) Start Date Monday, May 6, 2013					
	iv Save Changes Cancel					

Figure 15 Configuring periodic collection



8 Sending system logs manually (collection on demand)

When a support case is opened or updated, the SupportAssist client runs the appropriate collection tool on the devices that generated the alerts, and then uploads the system logs to Dell. In certain conditions, if required by Dell technical support, you may be required to manually collect the system logs and send it to Dell.

To send the system logs manually:

- i. Click the **Devices** tab.
- ii. Select an PowerVault MD Series storage array in the Device Inventory table.
- iii. Click Send System logs.

The collection tool is invoked and the generated system log collection is uploaded to Dell.

Cases Devices Settings								
Device Inventory								
Edit Device Credentials Send System Logs Fitter By: Device Name Collect system logs Apply Filters Clear Filters					c			
	Device Name 🔺	Device Type	Service Tag	Collection Status				
🗹 ii	10.94.216.76	PowerVault Storage Device	456ABC					

Figure 16 Sending system logs manually

Conclusion

Dell SupportAssist identifies hardware failures on supported devices quickly and more accurately. It automates and streamlines the support process steps without much interaction from your side. With SupportAssist, integrated with OpenManage Essentials, you have a single systems management console to remotely monitor and manage your environment, giving you instant insight into how your systems are performing at all times.

