

Monitoring Dell EqualLogic 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 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 EqualLogic storage arrays using Dell SupportAssist. The following are the high-level areas covered:

- Steps to perform discovery and inventory
- Case creation in SupportAssist for an alert
- Execution of the log collection tool
- Configuring periodic collection
- 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 discovery process in OpenManage Essentials communicates with the EqualLogic storage arrays using SNMP protocol. You may also be required to provide the SNMP community string during the discovery process.

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.

Home Manage Reports Pr	AGE ESSENTIALS		•
Devices Device Search Disc Discovery Portal Discovery Portal Common Tasks Add Discovery Range Add Discovery Range Group Add Exclude Range Discovery Schedule Status Schedule Discovery Ranges Exclude Ranges Exclude Ranges Exclude Ranges	Discovery Range Configuration Discovery Range Configuration ICMP Configuration SNMP Configuration WMI Configuration Storage Configuration WS-Man Configuration SSH Configuration IPMI Configuration Discovery Range Action Summary	Ation Discovery Range Configuration 1/10 Specify IP address, range, or host name. Enter an IP address or a range. The first octet cannot be zero. Specify a range (for example, 12-115) or wildcard(*) in the last two octes. IP address / range: IP address / range:	

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



The following example demonstrates adding a discovery range with SNMP protocol using the Add Discovery Range Wizard.

Discover Devices						23
Discovery Range Configura	tion Discovery Rang	e Configuration				1/10
Discovery Range Configuration	Specify IP addres	s, range, or host na	ame.			
SNMP Configuration	Enter an IP address or a the last two octets.	a range. The first octet ca	annot be zero. Spec	ify a range (for examp	le, 12-115) or v	vildcard(*) in
WMI 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 / Host Name	Discovery Range Name	Subnet Mask			
Discovery Range Action	10.94.168.*	Range_Server	255.255.255.0			
Summary					iV	
Help	(Cancel	Next	Finish

Figure 4 Specifying an IP range

- 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.
- iv. Repeat step i to step iii, to add more discovery ranges.
- v. Click **Next** to proceed.



2 Discovering EqualLogic storage arrays

To discover an EqualLogic storage array:

- 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.

NOTE: It is recommended that you discover all member IPs of the EqualLogic storage array.

Discover	Devices

Discovery Range Configurat	tion Discovery Rang	e Configuration				1/10
Discovery Range Configuration ICMP Configuration SNMP Configuration	Specify IP address Enter an IP address or a the last two octets.	ss, range, or host na	ame. annot be zero. Specif	y a range (for examp	le, 12-115) or v	wildcard(*) in
WMI Configuration	 IP address / range: Host name: 	10 . 94	. 178 . 89	Name : Printer	ii	
WS-Man Configuration	Subnet mask:	255 . 255	. 255 . 0	Add	Remove	Import
IPMI Configuration Discovery Range Action	IP Range / Host Name 10.94.168.*	Discovery Range Name Range_Server	Subnet Mask 255.255.255.0	111		
Summary			1		iv	
Help	L			Cancel	Next	Finish

Figure 5 Specifying an IP range

2.1 SNMP configuration

In the SNMP Configuration screen,

Figure 6

- i. select the Enable SNMP discovery option.
- ii. Type the community name in the **Get community** field.

23

Discover Devices			23
Discovery Range Configurati	on SNMP Cont	figuration	3/10
Discovery Range Configuration	Specify the S	SNMP settings for discovery.	?
SNMP Configuration	🗹 Enable SNMP d	liscovery:	
WMI Configuration	Get community:	public	
Storage Configuration	Set community:		
WS-Man Configuration	Timeout:	4 e seconds	
SSH Configuration	Retries:	2 attempts	
IPMI Configuration			
Discovery Range Action			
Summary			
Help		Cancel Back Next Fit	nish

Figure 7 SNMP configuration screen

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

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



Figure 8 EqualLogic array discovered in OpenManage Essentials

Configuring the EqualLogic storage array to send alerts to OpenManage Essentials

Log in to the EqualLogic Group Manager with the management IP of the EqualLogic storage array and navigate to Group Configuration SNMP tab. Provide the SNMP trap destination (system where OpenManage Essentials is installed) and provide the community string and click Add.

Group		Sroup Configuration		
Group SupportAssist Group Configuration Storage Pools Members SupportAssist01		Summary General Settings Group name: SupportAssist IP address: 10.94.101.115 Administration Access Web access: enabled Telnet access: SH access: enabled Idle timeout: disabled Session banner: disabled E-mail Notifications	General Administration Notifications ISCSI Read-only SNMP community names Image: Add model Image: Add model Image: Add model public Image: Add model Image: Add model Image: Add model Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Community names Image: Com	SNMP VDS/VSS Defa SNMP / A community name is a passy management data. You can sp
		E-mail alerts: disabled E-mail Home: disabled		SNMP
	₹¥	Event Logs Syslog: disabled <u>iSCSI Authentication</u> RADIUS: disabled Local CHAP: enabled <u>SNMP Settings</u> SNMP access: enabled	SNMP trap destinations 10.94.218.200 10.94.216.211 10.94.218.42 10.94.219.40 Add Modify Delete	PS Series storage array SNMF complete list of SNMP traps, s

Figure 9 Configuring the EqualLogic array to receive alerts

3



4 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.

4.1 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.



Policy Property	Description	Example
clientType	The type of client reporting the alert	"OME"
eventSourceType	The source of the alert	".1.3.6.1.4.1.12740.2.2.1"
trapld	The trap identifier	"16"
eventId	The event identifier	(null)
severity	Severity of the alert	"MINOR"
description	Description of the alert	"Sent when a critical hardware component has failed"
autoCase	Indicates if the alert should be processed	true
alertThreshold	Policy filter when the case is created	"Occurs(2,1-00:00)"
deltaSeverity	Severity code passed to delta	"3"

Table 2Example of policy file details

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

Alert Details						
Severity: Wa Acknowledged: Not	Severity: Warning Acknowledged: Not Acknowledged					
DeviceSupportAssit Time4/3/2013 12:12:19 AM CategoryEqualLogic Storage SourceeqlMemberHealthPowerSupplyFailure						
The implementation of th one notification of this typ span. Variables: eqlMemberHealthDetailsP 1,eqlMemberHealthDetail Power	is trap should not send mo pe for a sensor in any 10 m 'owerSupplyName=Power S sPowerSupplyCurrentState	re than hinute time Supply =No AC				
Alert Variables:						
SNMP Enterprise OID	.1.3.6.1.4.1.12740.2.2.1					
SNMP Generic Trap OID 6						
SNMP Specific Trap OID 6						
	Previous Next	Close				

Figure 10 Alert details in OpenManage Essentials

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 EqualLogic 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.

Device: Cases												
Case List												
Filter By: Case Number 🔻 Kepty Filters Clear Filters												
Case Status	Case Number	Case Title	Progress	Service Contract	Device Type	Service Tag	Date Opened 🔻					
Submitted	800615557	WCG OWEI FAI Sent when a failure hasbeen 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	1					H H Page 1	1 of 1 ≫ →					

Figure 11 Support case created for an EqualLogic storage array





6 Configuring periodic collection

By default, SupportAssist generates the system log collection from EqualLogic 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 as required.

To configure the periodic collection:

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

ttings	
ystem Logs	Default Device Type Credentials
V	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. ii
	 Edit Device Type Credentials
references	Device Type Storage Credential Type MDSeries
O	System Log Collection Schedule
Contact formation	How do I turn on/off scheduling for all devices? 🛈
Warf A sind Warf A	iii Frequency Monthly ▼
	Specify day and time The First V Mon V at 12:00 V AM V of every 1 V month(s)
	Start Date Monday, May 6, 2013
	iv Save Changes Cancel

Figure 12 Configuring periodic collection



7 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 a device in the **Device Inventory** table.
- iii. Click Send System logs.

The collection tool (Dell Lasso) 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									
	Device Name 🔺	Device Type	Service Tag	Collection Status					
🗹 ij	10.94.216.76	PowerVault Storage Device	456ABC						

Figure 13 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.

