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.

1. 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**.

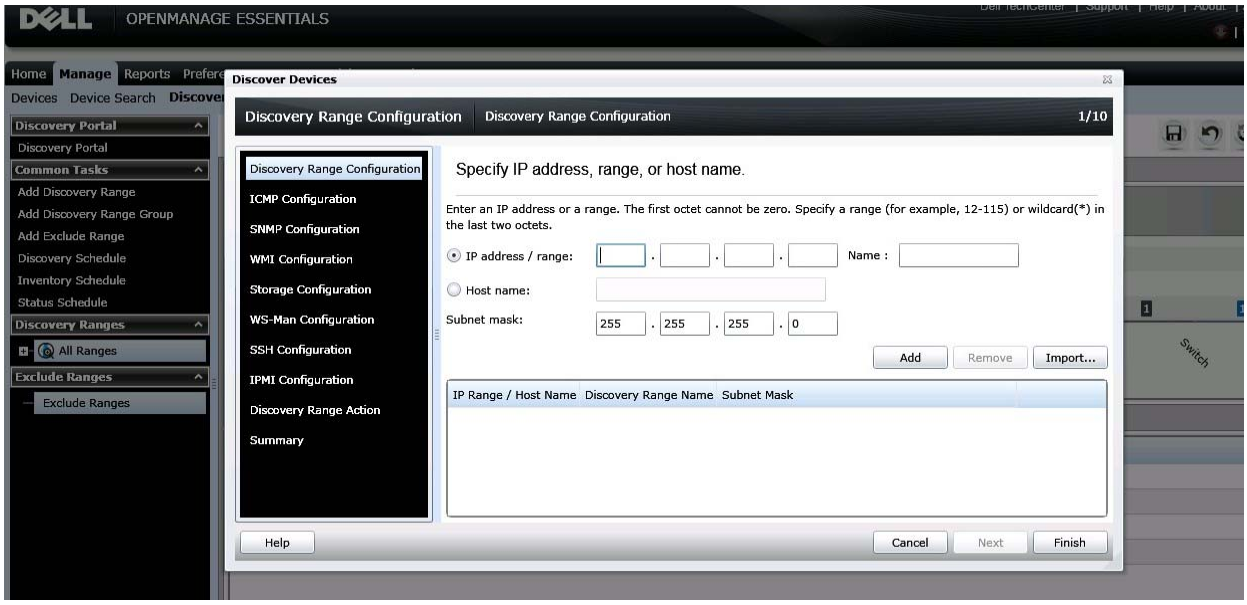

Figure 1 Discovery Range Wizard

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

IP Range	193.109.112.*
	193.104.20-40.*
	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	Type	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

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.

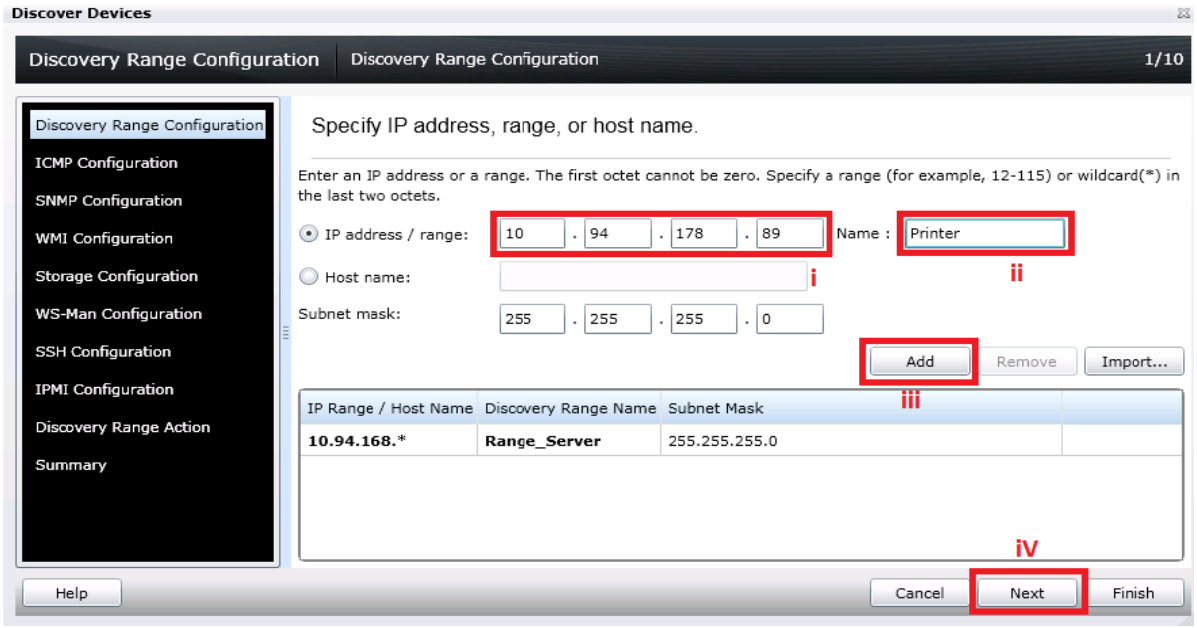

Figure 4 Specifying an IP range

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.

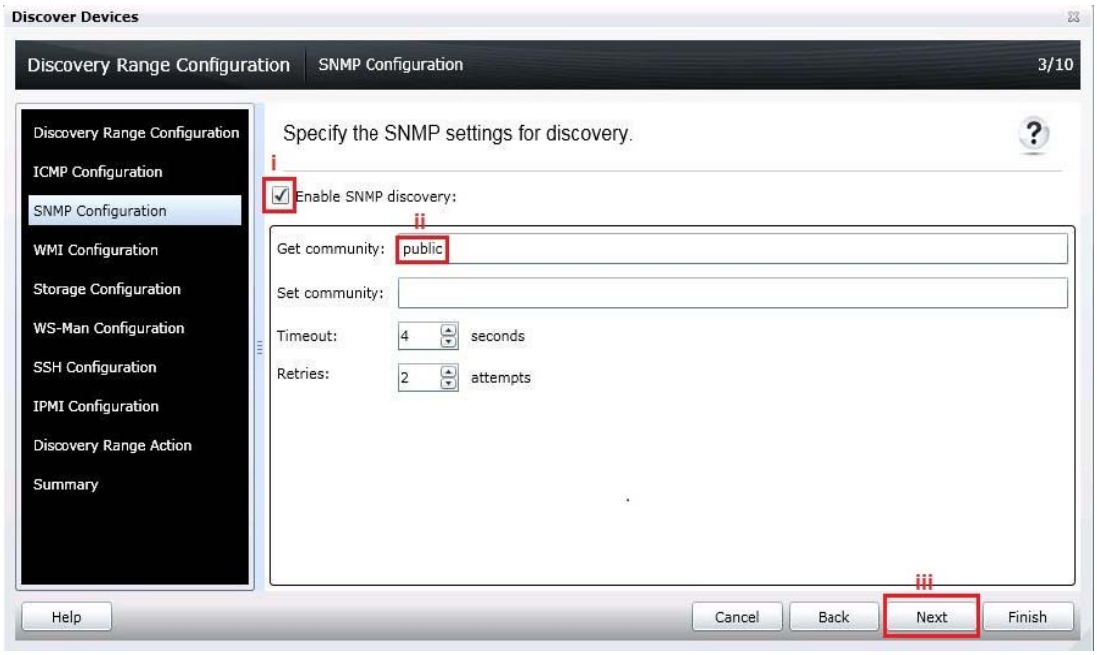

Figure 5 SNMP Configuration

2.2 Storage configuration

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

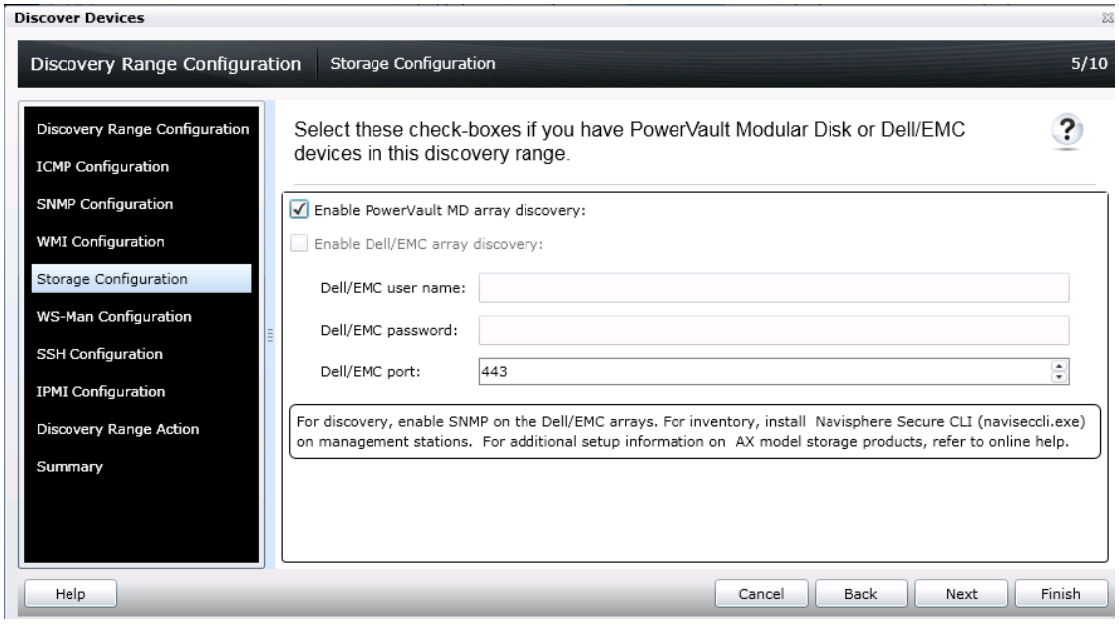

Figure 6 Storage Configuration

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**.

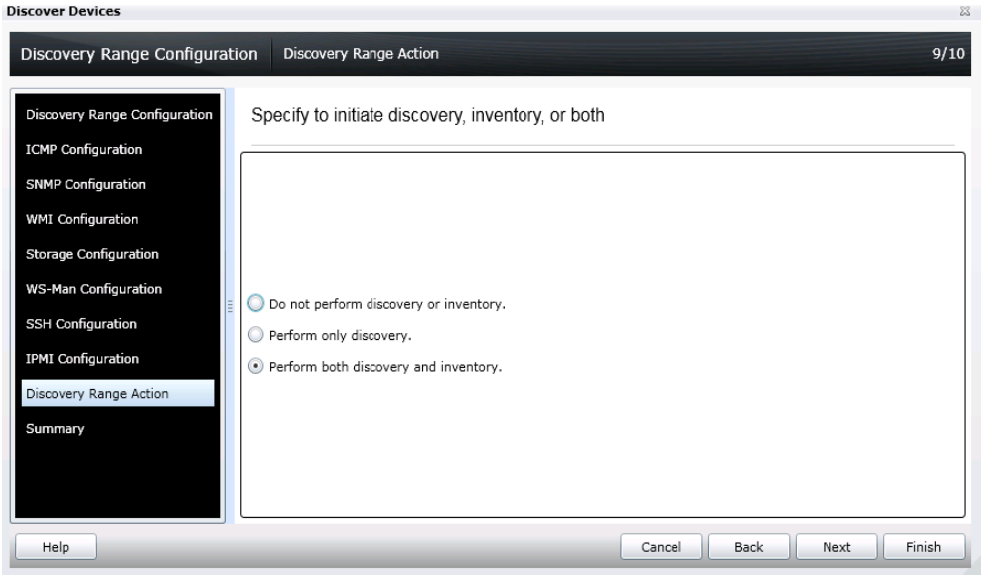

Figure 7 Dicovery Range Action

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→ All Programs→ Dell→ 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**.

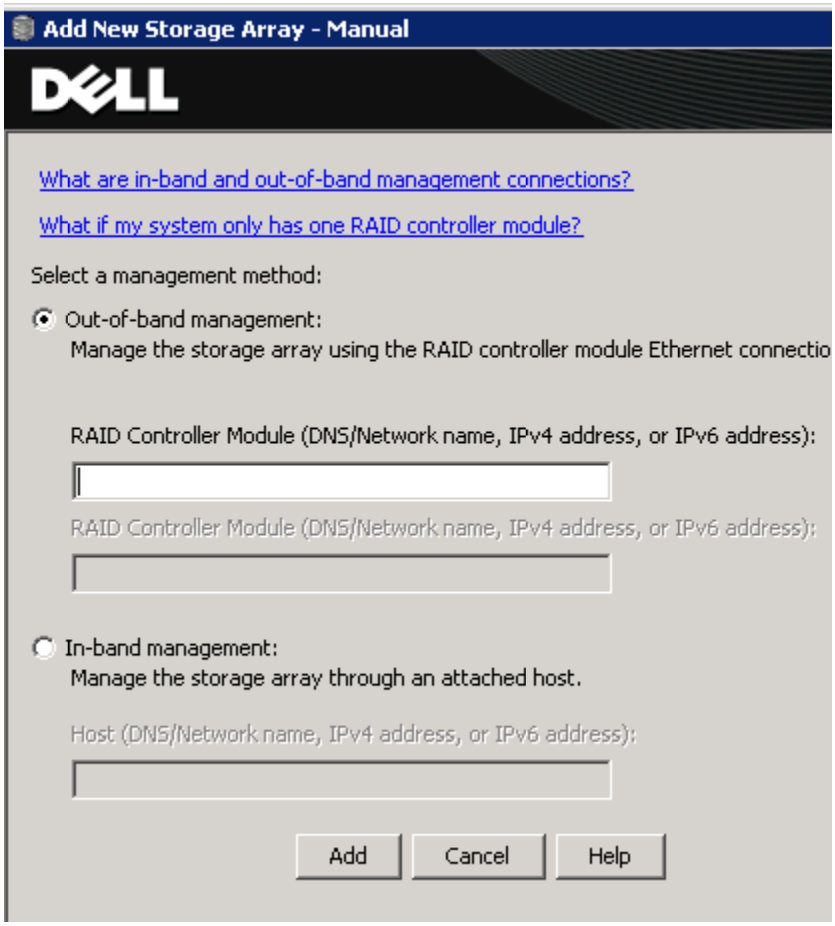

Figure 9 Adding the storage array in the Storage Manager

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

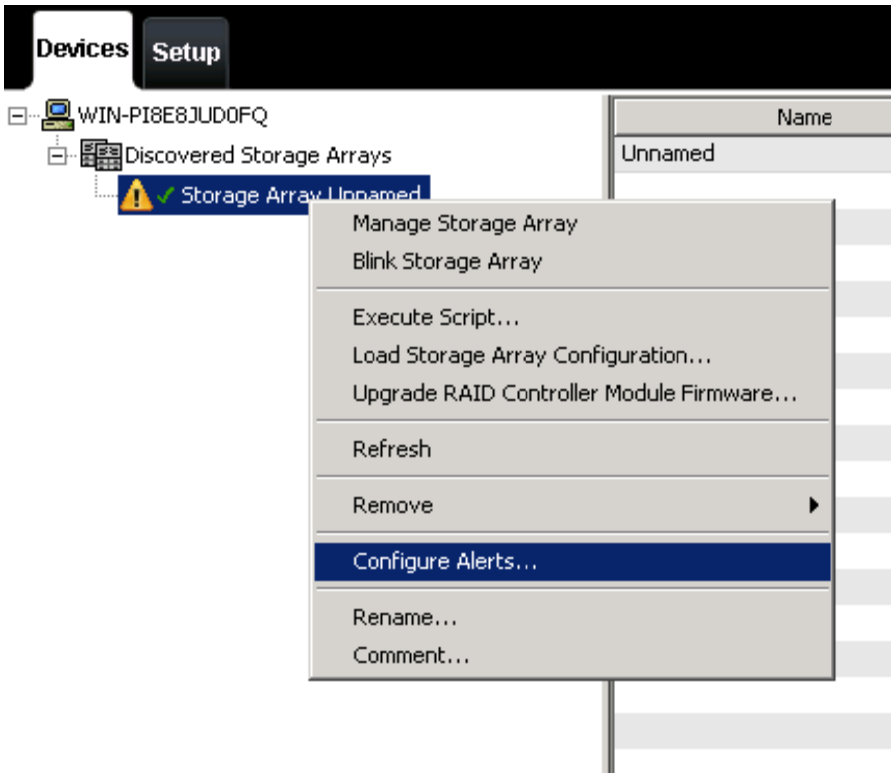

Figure 10 Configuring alerts

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.

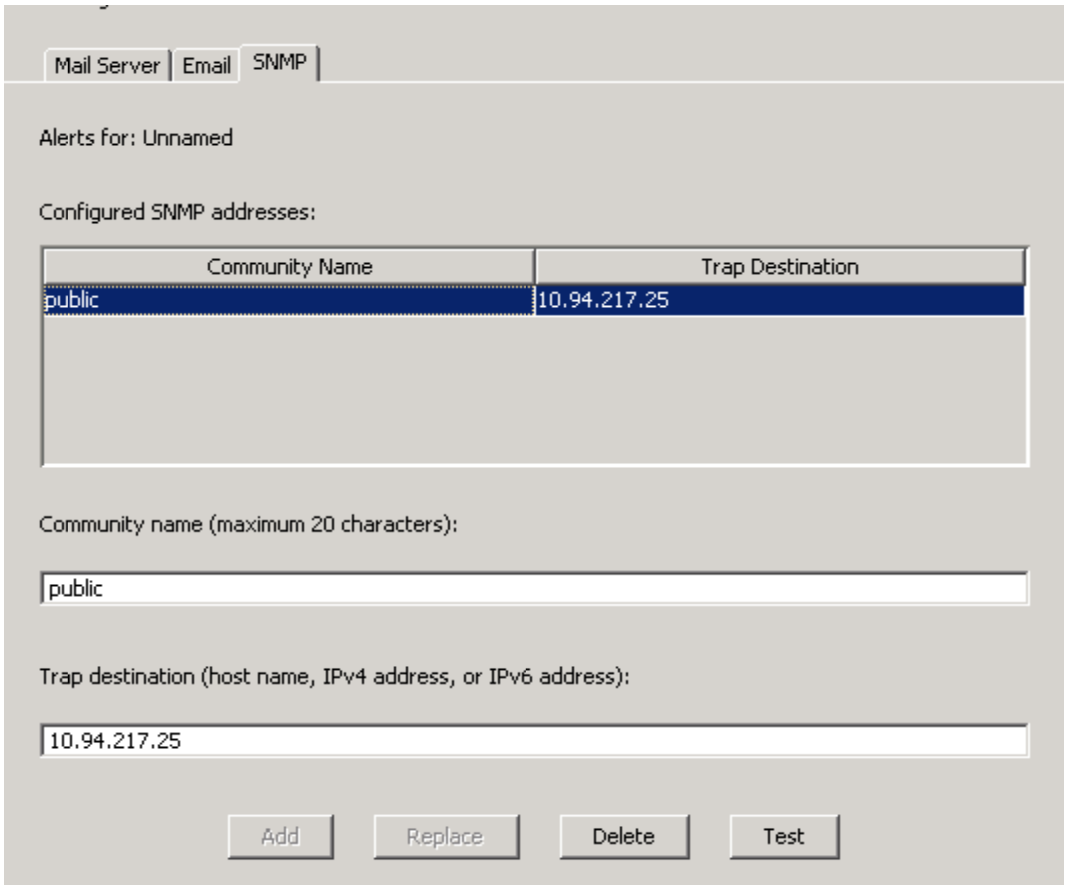

Figure 11 Adding the community string and trap destination in the Storage Manager

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.

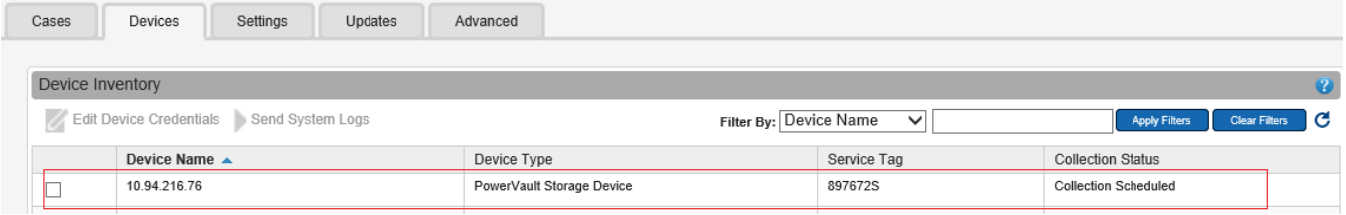

Figure 12 Devices tab

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.

Table 1 Examples of Occurs threshold

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

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 Policy file details

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"
trapId	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.

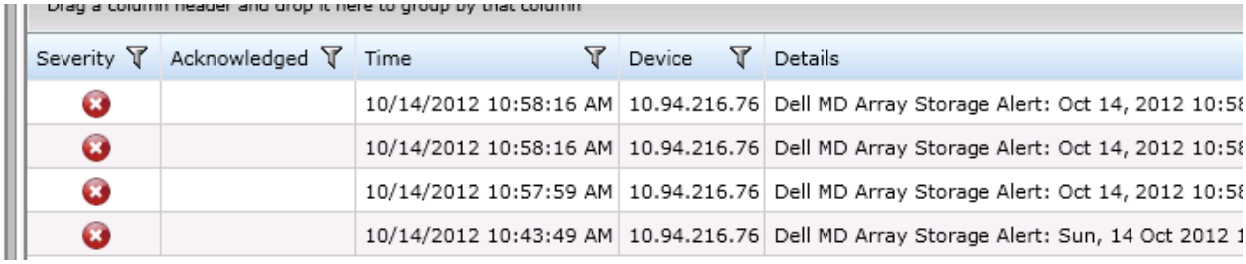

Figure 13 Critical alerts from PowerVault MD Series storage arrays

6 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.
- 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.

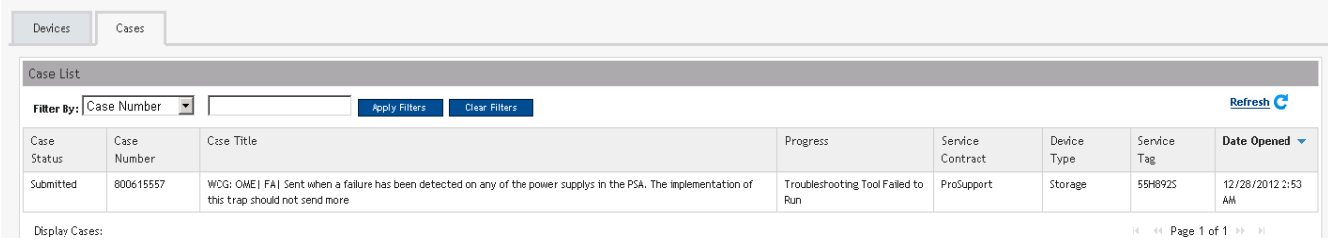

Figure 14 Support case created for a PowerVault MD storage array

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**.

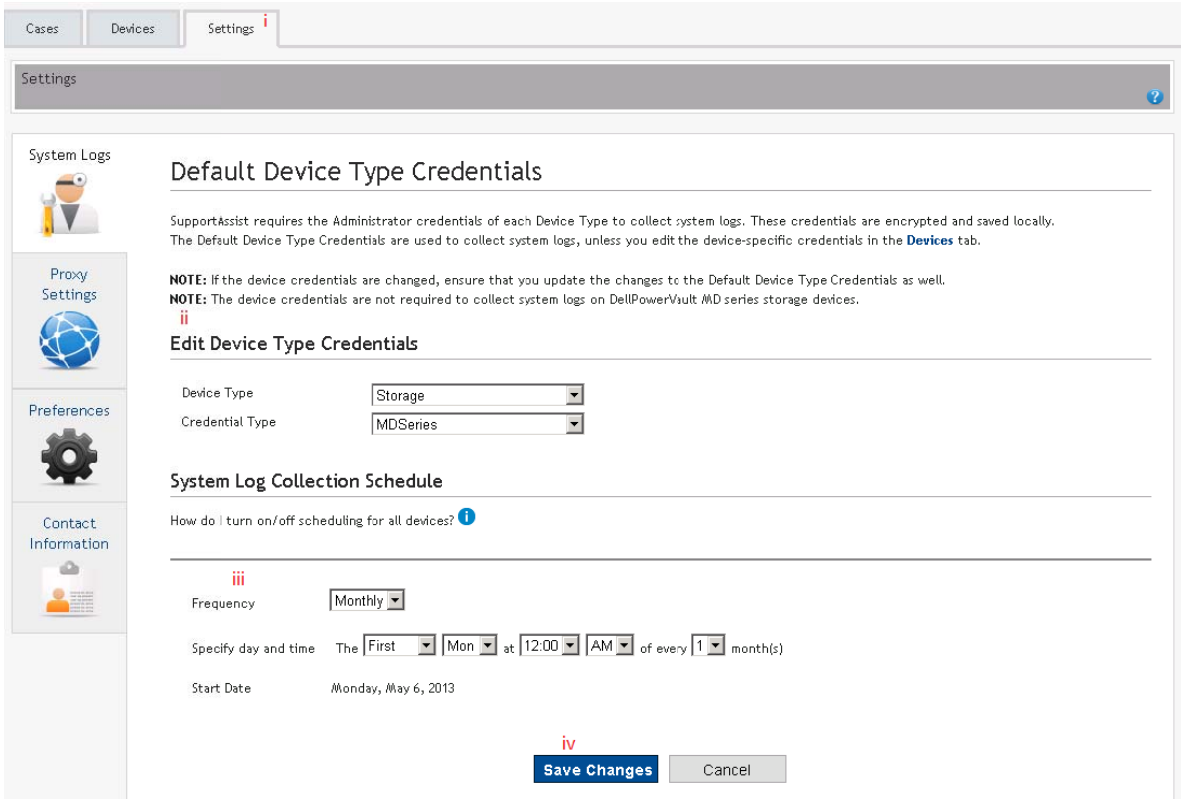

Figure 15 Configuring periodic collection

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.

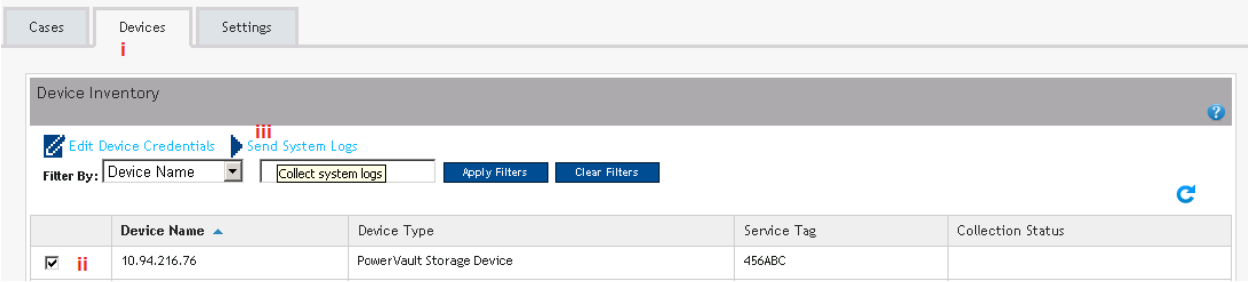

Figure 16 Sending system logs manually

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.