

Dell EMC OpenManage Plug-in Version 2.1 for Nagios Core

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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Contents

1 Introduction to Dell EMC OpenManage Plug-in Version 2.1 for Nagios Core.....	6
2 What is new in Dell EMC OpenManage Plug-in version 2.1.....	7
3 Key features.....	9
4 Support matrix.....	10
Datacenter Scalable Solutions.....	10
Hyper-converged Infrastructure (HCI) Platforms.....	10
PowerEdge Servers.....	11
PowerEdge Chassis.....	11
Compellent SC-Series Storage Arrays.....	12
EqualLogic PS-Series Storage Arrays.....	12
PowerVault MD-Series Storage Arrays	12
5 Device discovery and inventory.....	13
About device discovery.....	13
About Dell EMC device discovery utility.....	14
Choosing the services to monitor for a Dell EMC device.....	17
About protocol parameters.....	17
Discovering Dell EMC devices.....	18
Device information.....	19
About device information.....	19
Viewing device information.....	21
Viewing Dell EMC devices in the Nagios Core console.....	21
6 Monitoring Dell EMC devices.....	23
Overall health status of the Dell EMC devices.....	23
About overall health status	23
Viewing overall health status.....	24
Monitoring component health of Dell EMC devices.....	25
About monitoring component health of Dell EMC devices.....	25
Monitoring component health status of Dell EMC devices.....	32
Monitoring SNMP alerts.....	32
About SNMP alert monitoring.....	32
Viewing SNMP alerts.....	33
7 Launching Dell EMC device specific consoles.....	34
Dell EMC devices and their consoles.....	34
8 Warranty information for Dell EMC devices.....	35
Warranty information attributes.....	35

Configuring the Dell EMC warranty information parameters.....	35
Viewing warranty information.....	36
9 Removing Dell EMC devices.....	37
10 Knowledge Base (KB) messages for the generated alerts.....	38
Viewing KB messages.....	38
11 Troubleshooting	39
SNMP traps are not received from the Dell EMC devices in the Nagios Core Console for Ubuntu setup.....	39
Nagios console doesn't get eqlMemberGatewayIPAddrChanged trap.....	39
Compellent Storage Manager UI fails to launch if the Compellent firmware version is 7.1.12.....	39
The Dell EMC OpenManage Plug-in for Nagios Core installation script is failing.....	39
The Dell EMC OpenManage Plug-in for Nagios Core uninstallation script is failing.....	39
The discovery script is failing to execute.....	40
The discovery script is not creating the host and service definition file for IPv4 or IPv6 addresses or hosts when the protocol selected is 1 (SNMP).....	40
The discovery script is not creating the host and service definition file for IPv4 or IPv6 addresses or hosts when the protocol selected is 2 (WSMan).....	40
The Dell EMC device's IP address or host name changes after discovery of the device.....	40
The Nagios Core Console is not displaying the Dell EMC devices that are discovered using the Dell EMC discovery script.....	41
The Nagios Core Console is not displaying the Trap Service for Dell EMC devices that are discovered using the Dell EMC discovery script.....	41
The Dell EMC OpenManage Plug-in specific services are displaying the message, "Error while creating SNMP Session".....	41
Dell EMC OpenManage Plug-in specific services are displaying the message, "WSMan Error while communicating with host".....	41
Dell EMC OpenManage Plug-in specific services are displaying the message, "Component Information = UNKNOWN".....	42
Unable to view the SNMP alerts generated by the Dell EMC device in the Nagios Core Console.....	42
Unable to monitor the RACADM attributes services such as Speed(RPM), InputCurrent(A), InputVoltage(V), and OutputPower(W) and Status (Dell EMC Chassis I/O Module Status) for Dell EMC chassis devices in the Nagios Core Console.....	42
Unable to monitor the Warranty information for the discovered Dell EMC devices in the Nagios Core Console.....	42
The Overall Health status is not getting refreshed after receiving a Dell EMC device alert.....	43
Where do I find the Opensman distribution and its Perl binding?.....	43
Unable to view the KB information from the device trap after the Nagios Management Server IP address is changed.....	43
12 Frequently asked questions.....	44
A Appendix.....	45
Configuring SNMP parameters for iDRAC using the iDRAC web console	45
Configuring SNMP parameters for iDRAC using RACADM script	45
Configuring SNMP trap destination address for iDRAC using iDRAC web console.....	45

Configuring SNMP trap destination address for iDRAC using RACADM 46

Introduction to Dell EMC OpenManage Plug-in Version 2.1 for Nagios Core

This guide provides information about using the Dell EMC OpenManage Plug-in Version 2.1 for Nagios Core and its various features such as discovering, monitoring, launching consoles, and troubleshooting of the supported Dell EMC devices. The guide also provides details of the supported Dell EMC devices and frequently asked questions by the customer.

This plug-in provides capabilities to monitor Dell EMC devices in environments managed by Nagios Core. This plug-in, gives you complete hardware-level visibility of Dell EMC devices, including overall and component-level health monitoring. The plug-in provides basic inventory information and event monitoring of Dell EMC devices. The plug-in also supports one-to-one web console launch of the supported Dell EMC devices for further troubleshooting, configuration, and management activities.

For more details on device support, see Support matrix in the *"Dell EMC OpenManage Plug-in Version 2.1 for Nagios Core User's Guide."*

What is new in Dell EMC OpenManage Plug-in version 2.1

The following table lists the new features and functionality of the Dell EMC OpenManage Plug-in version 2.1:

Table 1. New features and functionality

New Feature	Description
Support for new Dell EMC devices	With this version, you can discover and monitor the following new Dell EMC devices: • New launches of 14th generations of PowerEdge servers through Integrated Dell Remote Access Controller (iDRAC) with Lifecycle Controller (LC) • Hyper-converged Infrastructure (HCI) Platforms - Dell EMC VxRail and Dell EMC XC Series For more details on device support, see Support matrix in the "<i>Dell EMC OpenManage Plug-in Version 2.1 for Nagios Core User's Guide</i>."
Monitor basic system information including component level	This version provides basic system information including component level details of the following Dell EMC devices: • 14th generation PowerEdge servers • HCI Platforms
Latest firmware version	This version supports the latest firmware versions for the following Dell EMC devices • 12th and 13th generation of PowerEdge servers (iDRAC7 and iDRAC8) • Datacenter Scalable Solutions (DSS) • PowerEdge FX2/FX2s chassis • PowerEdge VRTX chassis • PowerEdge M1000e chassis • EqualLogic PS Series Storage Arrays • PowerVault MD 34/38 Series Storage Arrays • Compellent Storage Arrays
Upgrade to Dell EMC OpenManage Plug-in version 2.1 for Nagios Core	You can upgrade from Dell OpenManage Plug-in Version 1.0 and 2.0 to Dell EMC OpenManage Plug-in Version 2.1.
View and monitor SNMP alerts	View and monitor SNMP alerts from the 14th generation PowerEdge servers and HCI Platforms.
Trap based health monitoring	Trap based health monitoring of the 14th generation PowerEdge servers and HCI Platforms.
Launch Dell EMC device specific consoles	This version supports the launch the following Dell one-to-one consoles to perform further troubleshooting, configuration, or management activities for the supported Dell EMC devices: • Integrated Dell Remote Access Controller Console for 14th generation PowerEdge servers and HCI Platforms
View warranty information	This feature allows you to view the warranty information for 14th generation PowerEdge servers and HCI Platforms.

New Feature	Description
View Knowledge Base (KB) messages	You can get more information about the SNMP alerts through the KB articles associated with those alerts. You can view the KB messages for 14th generation PowerEdge servers and HCI Platforms.

Key features

The key features of the Dell EMC OpenManage Plug-in Version 2.1 for Nagios Core are as described in the following table.

Table 2. Key features

Feature	Functionality
Device discovery	Discovers the supported Dell EMC devices in the Nagios Core console. Once the discovery is complete, host and service definitions are created for each device. To discover Dell Servers through iDRAC with Lifecycle Controller, you can opt for either SNMP or WSMAN protocol. Dell storage is discovered using SNMP protocol. Dell chassis is discovered using WSMAN protocol.
Device information	Displays information about the discovered device (Service Tag, Firmware Version, Device Name, Device Model, and so on) and its components (Physical Disks, Power Supply, Temperature Probe, Voltage Probe, and so on) after a device discovery is successful. You can view this information in the Hosts or Services view in the Nagios Core console. For more information about the device information provided by the Plug-in, see Device Information.
Monitor overall health of Dell EMC devices	Monitors the overall health of Dell EMC devices in a scheduled or periodic manner.
Component level health of Dell EMC devices	Monitors the health of device components (Physical Disks, Power Supply, Temperature Probe, Voltage Probe, and so on) and displays information about the Dell EMC device component status at scheduled time intervals.
Monitor SNMP alerts	Monitors SNMP alerts for Dell EMC devices. This feature displays only the last received SNMP alert. To view all received SNMP alerts navigate to Reports > Alerts > History in the Nagios Core console. You can also view the Alert Knowledge Base (KB) information for the supported Dell EMC devices corresponding to an SNMP alert for faster troubleshooting of the respective alert. For more information, see Knowledge Base (KB) messages for the generated alerts in the <i>Dell EMC OpenManage Plug-in Version 2.1 for Nagios Core User's Guide</i>.  NOTE: KB information is not available for Compellent Storage Arrays and PowerVault MD Storage Arrays.
Launching device specific consoles	Launches the respective Dell EMC one-to-one consoles to further troubleshoot and manage the supported Dell EMC devices. For more information, see Launching Dell EMC Device Specific Consoles .
Warranty information	Monitors and displays the warranty information for the supported Dell EMC devices in a periodic manner and displays the status in the Nagios Core console. For more information, see Warranty information for Dell EMC devices .

Support matrix

Dell EMC OpenManage Plug-in version 2.1 for Nagios Core supports the Dell EMC devices as listed in the following tables.

Datacenter Scalable Solutions

Table 3. Supported Datacenter Scalable Solutions.

Datacenter Scalable Solutions (DSS)

DSS 1500

DSS 1510

DSS 2500

Hyper-converged Infrastructure (HCI) Platforms

Table 4. Supported HCI Platforms

VxRail Devices

VxRail E460

VxRail E460F

VxRail P470

VxRail P470F

VxRail V470

VxRail V470F

VxRail S470

Nutanix XC Devices

XC6320-6

XC6320-6AF

XC430 Xpress

XC430-4

XC430-8

XC630-10

XC630-10AF

XC630-10P

XC730-16G

XC730xd-12

XC730xd-12C

XC730xd-12R

PowerEdge Servers

Table 5. Supported PowerEdge Servers.

12th generation of PowerEdge servers	13th generation of PowerEdge servers	14th generation of PowerEdge servers
FM120x4	C4130	R640
M420	C6320	R740
M520	FC230	R740xd
M620	FC430	R940
M820	FC630	C6420
R220	FC830	
R320	M630	
R420	M830	
R520	R230	
R620	R330	
R720xd	R430	
R820	R530	
R920	R530xd	
T320	R630	
T420	R730	
T620	R730xd	
	R830	
	R930	
	T130	
	T330	
	T430	
	T630	

PowerEdge Chassis

Table 6. Supported PowerEdge chassis.

PowerEdge FX2
 PowerEdge FX2s
 PowerEdge VRTX
 PowerEdge M1000e

Compellent SC-Series Storage Arrays

Table 7. Supported Compellent Storage Arrays.

Compellent Series 40
Compellent SC4020
Compellent SC8000

EqualLogic PS-Series Storage Arrays

Table 8. Supported EqualLogic PS-Series Storage Arrays.

EqualLogic PS4100	EqualLogic PS6100
EqualLogic PSM4110	EqualLogic PS6210
	EqualLogic PS6500
	EqualLogic PS6510

PowerVault MD-Series Storage Arrays

Table 9. Supported PowerVault MD-Series Storage Arrays.

PowerVault MD3400
PowerVault MD3420
PowerVault MD3460
PowerVault MD3800f
PowerVault MD3800i
PowerVault MD3820f
PowerVault MD3820i
PowerVault MD3860f
PowerVault MD3860i

Device discovery and inventory

Topics:

- [About device discovery](#)
- [About Dell EMC device discovery utility](#)
- [About protocol parameters](#)
- [Discovering Dell EMC devices](#)
- [Device information](#)
- [Viewing Dell EMC devices in the Nagios Core console](#)

About device discovery

You can discover the supported Dell EMC devices with this plug-in in the Nagios Core console. The monitoring protocols for the supported Dell EMC devices are as follows:

- Dell EMC Servers are discovered using SNMP or WSMAN protocol

NOTE: At a time you can discover a Dell EMC Server using SNMP or WSMAN protocol and not both. To rediscover a server previously discovered through SNMP protocol with WSMAN protocol or vice versa, run the discovery script with the `-f` option along with the parameter for the desired protocol.

For example:

If a server was discovered using SNMP protocol, but you want to discover the same device using WSMAN protocol, navigate to `<NAGIOS_HOME>/dell/scripts`, and run the following PERL script:

```
perl dell_device_discovery.pl -H <host or IP Address> -P 2 -f
```

`<NAGIOS_HOME>` is the installed location of Nagios Core and by default, the location of `<NAGIOS_HOME>` is `/usr/local/nagios`.

- Dell EMC Chassis are discovered using WSMAN protocol.
- Dell EMC Storage are discovered using SNMP protocol

You must use **Dell Device Discovery Utility** to discover Dell EMC devices. If the discovery is successful, then for the discovered devices, host and service definition files are created. For a device, it is recommended to have a unique host name and IP address. In Nagios Core, ensure that a host and service definition is not already present for a Dell EMC device that you want to discover.

You can discover devices using any of the following:

- Device's IP address or FQDN
- Subnet with mask
- File containing a list of device IP addresses or FQDNs

NOTE: To customize the number of discovery processes that can run simultaneously, based on your requirements, navigate to `Dell EMC OpenManage Plugin > resources > dell_pluginconfig.cfg` file and edit the default numerical value for the following parameter:

process.count. Its default value is 20.

The recommended value for process.count is a value between 1 and 150.

About Dell EMC device discovery utility

To run the **Dell Device Discovery Utility**, navigate to <NAGIOS_HOME>/dell/scripts, and run the following PERL script:

```
perl dell_device_discovery.pl -h
```

All the available Dell EMC device discovery utility options are displayed.

```
perl dell_device_discovery.pl -H <Host or IP address> | -F <IP address list file> | -S <Subnet  
with mask> [-P <Protocol>] [-c <Protocol specific config file>] [-t <Service template file>] [-  
f] [-d]
```

Table 10. Dell EMC device discovery utility options

Options	Short Description	Description
-h	help	Display help text.
-H	host	Host IP address or FQDN name.
-S	subnet	Subnet with mask.
-F	file	File with absolute path containing list of newline separated IP address or FQDN name.
-P	protocol	Protocol used for monitoring. Allowed options 1 (SNMP) and 2 (WSMan). If -P is not used, the Dell EMC Server will be discovered using SNMP Protocol by default. This value is optional.
-c	config file	Protocol specific configuration file. The default file is .dell_device_comm_params.cfg. For more information see About Protocol Parameters .
-t	template	Template file with absolute path for customized service monitoring. The default file is dell_device_services_template.c fg
-f	force	Force rewrite of config file. This option is used to rediscover an already discovered device.
-d	detailed services	All services monitor option based on services defined in service template file. If you run the utility without this option, then the basic three services are created. For more information, see <i>Table 3. Default services created based on selected protocol</i> .

Based on the options you selected during discovery, the following services are associated with that host:

- If you run `perl dell_device_discovery.pl` without the `-d` option, then only the basic services are created by default and displayed in the user interface under **Services**.

 **NOTE:** SNMPTT must be configured for you to be able to receive traps.

- If you run `perl dell_device_discovery.pl` with the `-d` option, additional services are created as listed in the table below, and are displayed in the Nagios Core console under **Services**:

Table 11. Default services created for Dell EMC Servers based on the selected protocol

Services	SNMP	WSMan Protocol
Basic Services		
Dell EMC Server Overall Health Status	✓	✓
Dell EMC Server Information	✓	✓
Dell EMC Server Traps	✓	✓
Detailed Services		
Dell EMC Memory Status	✓	✓
Dell EMC Server Physical Disk Status	✓	✓
Dell EMC Server Virtual Disk Status	✓	✓
Dell EMC Server Fan Status	✓	✓
Dell EMC Server Battery Status	✓	✓
Dell EMC Server Intrusion Status	✓	✓
Dell EMC Server Network Device Status	✓	✓
Dell EMC Server Voltage Probe Status	✓	✓
Dell EMC Server Controller Status	✓	✓
Dell EMC Server Amperage Probe Status	✓	✓
Dell EMC Server CPU Status	✓	✓
Dell EMC Server Power Supply Status	✓	✓
Dell EMC Server Temperature Probe Status	✓	✓
Dell EMC Server SD Card Status	X	✓
Dell EMC Server FC NIC Status	X	✓
Dell EMC Server Warranty Information	✓	✓

Table 12. Default services created for all Dell EMC Chassis based on WSMan protocol

Services
Basic Services
Dell EMC Chassis Overall Health Status
Dell EMC Chassis Information
Dell EMC Chassis Traps
Detailed Services
Dell EMC Chassis Fan Status
Dell EMC Chassis Slot Information

Services

Dell EMC Chassis I/O Module Status

Dell EMC Chassis Power Supply Status

Dell EMC Chassis KVM Status

Dell EMC Chassis Enclosure Status (This service is applicable to PowerEdge VRTX Chassis only)

Dell EMC Chassis Controller Status (This service is applicable to PowerEdge VRTX Chassis only)

Dell EMC Chassis Physical Disk Status (This service is applicable to PowerEdge VRTX Chassis only)

Dell EMC Chassis Virtual Disk Status (This service is applicable to PowerEdge VRTX Chassis only)

Dell EMC Chassis PCIe Devices Status (This service is applicable to PowerEdge VRTX Chassis and PowerEdge FX2/FX2s Chassis only)

Dell EMC Chassis Warranty Information

Table 13. Default services created for Compellent SC-Series Storage Arrays based on SNMP protocol

Services

Basic Services

Dell EMC Storage SC-Series Overall Health Status

Dell EMC Storage SC-Series Information

Dell EMC Storage SC-Series Management Traps

Dell EMC Storage SC-Series Controller Traps

Dell EMC Storage SC-Series Controller Overall Health Status

Dell EMC Storage SC-Series Controller Information

Detailed Services

Dell EMC Storage SC-Series Physical Disk Status

Dell EMC Storage SC-Series Volume Status

Dell EMC Storage SC-Series Controller Warranty Information

Table 14. Default services created for EqualLogic PS-Series Storage Arrays based on SNMP protocol

Services

Basic Services

Dell EMC Storage PS-Series Member Overall Health Status

Dell EMC Storage PS-Series Member Information

Dell EMC Storage PS-Series Group Information

Dell EMC Storage PS-Series Member Traps

Dell EMC Storage PS-Series Member Group Traps

Detailed Services

Dell EMC Storage PS-Series Member Physical Disk Status

Dell EMC Storage PS-Series Group Volume Status

Dell EMC Storage PS-Series Group Storage Pool Status

Dell EMC Storage PS-Series Member Warranty Information

Table 15. Default services created for PowerVault MD-Series Storage Arrays based on SNMP protocol

Services

Basic Services

Dell EMC Storage MD-Series MD Overall Health Status

Dell EMC Storage MD-Series MD Information

Dell EMC Storage MD-Series MD Traps

Detailed Services

Dell EMC Storage MD-Series Warranty Information

Choosing the services to monitor for a Dell EMC device

By default, all the available services are created for a Dell EMC device during discovery as supported by the protocol you have selected. If you wish to monitor only specific services for a discovered Dell EMC device while ignoring those services you do not wish to monitor, you can do so by navigating to the `<NAGIOS_HOME>/dell/scripts/dell_device_service_template.cfg` file and commenting those services you wish to ignore.

For example:

The default services as listed in the `dell_device_services_template.cfg` file for Dell EMC Servers discovered using WSMAN protocol are as follows:

- Dell EMC Server SD Card Status
- Dell EMC Server FC NIC Status

If you do not wish to monitor the `Dell EMC Server FC NIC Status` service, simply comment the starting of the line using `#` as follows:

```
#Dell EMC Server FC NIC Status
```

This service will not be created for the discovered Dell EMC Server in the Nagios Core console.

About protocol parameters

During discovery, depending on the protocol you have selected, SNMP or WSMAN, you can set values for the protocol in the parameters file, `.dell_device_comm_params.cfg`.

The `.dell_device_comm_params.cfg` file is present at the following location: `<NAGIOS_HOME>/dell/scripts`. The options provided are:

Table 16. Parameters file

Protocol communication parameters	Description
SNMP	
<code>snmp.version</code>	Use to input the SNMP version. Default version is 2.
<code>snmp.community</code>	Use to input the user macro for SNMP community string.
<code>snmp.retries</code>	Use to input the number of times an SNMP request must be sent when a timeout occurs . Default retry value is 1.
<code>snmp.timeout</code>	Use to input SNMP timeout value in seconds. Default timeout value is 3 seconds.
<code>snmp.port</code>	Use to input the SNMP port value. Default SNMP port value is 161.

Protocol communication parameters	Description
WSMan	
<code>wsman.username</code>	Use to input the user macro for WSMan service account user name.
<code>wsman.password</code>	Use to input the user macro for WSMan service account password.
<code>wsman.port</code>	Use to input the WSMan port value. Default value is 443.
<code>wsman.timeout</code>	Use to input WSMan timeout value in seconds. Default timeout value is 60 seconds.
<code>wsman.retries</code>	Use to input the number of times a WSMan request must be sent when a timeout occurs. Default retry value is 2.

NOTE:

You can configure the user macros, `snmp.community`, `wsman.username`, and `wsman.password` in the file `dell_resources.cfg` available at the location: `<NAGIOS_HOME>/dell/resources/`

Discovering Dell EMC devices

You can discover all the supported Dell EMC devices using this plug-in.

Prerequisites:

- If you are using SNMP protocol for discovery, ensure that SNMP version 1 or SNMP version 2 are enabled, community string is set and configured for Servers or Dell EMC Storage devices. For more information see [Appendix](#).
- A secured network connectivity is established between Nagios Core and the device.
- It is recommended that the device must have a resolvable FQDN.
- WSMan is enabled and configured for discovering Dell EMC Chassis devices.
- If you are using WSMan protocol, it is recommended that you use non-default account credentials.

To discover Dell EMC devices:

- 1 Log in to Nagios Core with Nagios administrator privileges.
- 2 Navigate to the directory `<NAGIOS_HOME>/dell/scripts`
- 3 Run the Dell Device Discovery Utility with the option: `perl dell_device_discovery.pl -h`
The script syntax and information on options are displayed. For more information see [About Dell Discovery Utility](#).

Based on your requirement do the following:

NOTE: Before running the utility, ensure that you have updated protocol related information, for more information see [About Protocol Parameters](#).

To discover a device using an IP address or FQDN:

- `perl dell_device_discovery.pl -H <IP address or FQDN name>`

To discover using subnet with mask:

- `perl dell_device_discovery.pl -S <Subnet with mask>`

An example format for subnet with mask: 11.98.149.0/24

To discover using a list of IP addresses present in a file:

- `perl dell_device_discovery.pl -F <IP address list file>`

- For the `-P` option, Opt for a protocol:

NOTE: Ensure that the IP list that you provide in the file is new-line separated.

- 4 When prompted to confirm the discovery of the Dell EMC device (s), press **Y** and then **Enter** to continue. To exit the discovery process, press any other key followed by **Enter** or press **Enter** to exit.
- 5 Once the discovery utility script is run, verify the Nagios configuration by running the command `<NAGIOS_HOME>/bin/nagios -v /usr/local/nagios/etc/nagios.cfg`.
- 6 Ensure that no errors are present and then restart Nagios Core by running the command `service nagios restart`.
- 7 You can view the logged information in the Log file path: `<NAGIOS_HOME>/var/dell/discovery_<yyyymmddhhmiss>.dbg`
In the filename, `<yyyymmddhhmiss>` pertains to the time when the log information was gathered; `yyyy` is the calendar year, `mm` is month, `dd` is date, `hh` is hour of the day, `mi` is minutes, and `ss` is seconds.

After completion of discovery:

- Dell EMC device Host definition and its service definitions are created in the Nagios server and this is subsequently used for monitoring the Dell EMC devices.

The discovered Dell EMC devices and their services are displayed in the **Host** view and the **Services** view in the Nagios Core console. Wait for the scheduled service to complete for the service details to be displayed.

- The discovered Dell EMC devices are displayed in the **Map** view in the Nagios Core console.

Using the `-t` or the `-c` options

The `-t` option can be used while discovering the Dell EMC devices if you have modified the `dell_device_services_template.cfg` file, which is the template file for basic or detailed monitoring of Dell EMC devices, according to your requirement and the file is saved in a non-default location.

Format:

```
perl dell_device_discovery.pl -H <IP address list file> -t <Complete path of the services template file>
```

The `-c` option can be used while discovering the Dell EMC devices if you have modified the `dell_device_comm_params.cfg` file, which is the protocol specific configuration file, according to your requirement and the file is saved in a non-default location.

Format:

```
perl dell_device_discovery.pl -H <IP address list file> -c <Complete path of the protocol specific config file>
```

Device information

About device information

The Dell EMC device information service provides the basic information about the system. By default this service is polled once a day.

Table 17. Device Information

Service	Status	Description	Attributes Displayed
Dell EMC Server Information	The following states are possible: • OK • Unknown	This service provides the basic device inventory information.	• Server Host FQDN • Model Name • Device Type (iDRAC7 or iDRAC8)

Service	Status	Description	Attributes Displayed
	• Critical • Warning	 NOTE: Chassis Tag is applicable only for modular servers and Node ID is applicable only for PowerEdge FM120x4	• Service Tag • Product Type (Monolithic or Modular) • Chassis Tag • iDRAC Firmware Version • OS Name • OS Version • iDRAC URL • Node Id
Dell EMC Chassis Information	The following states are possible: • OK • Unknown • Critical • Warning	This service provides the basic device inventory information for PowerEdge M1000e, PowerEdge VRTX, and PowerEdge FX2/FX2s chassis.	• Chassis Name • Model Name • Service Tag • CMC Firmware Version • CMC URL
Dell EMC Storage SC-Series Controller Information	The following states are possible: • OK • Unknown • Critical • Warning	This service provides the basic device inventory information for Compellent Controller IP	• Controller Name • Model Name • Service Tag • Compellent URL • Primary Controller
Dell EMC Storage SC-Series Information	The following states are possible: • OK • Unknown • Critical • Warning	This service provides the basic device inventory information for Compellent Management IP	• Storage Name • Firmware Version • Primary Controller Name • Primary Controller Model • Primary Controller Service Tag • Primary Controller IP • Secondary Controller Name • Secondary Controller Model • Secondary Controller Service Tag • Secondary Controller IP • Compellent URL
Dell EMC Storage PS-Series Member Information	The following states are possible: • OK • Unknown • Critical • Warning	This service provides the basic device inventory information for the EqualLogic Member.	• Member Name • Product Family • Model Name • Service Tag • Firmware Version • Chassis Type • Disk Count • Capacity(GB) • Free Space(GB) • RAID Policy

Service	Status	Description	Attributes Displayed
			- RAID Status - Group Name - Group IP - Storage Pool
Dell EMC Storage PS-Series Group Information	The following states are possible: OK Unknown Critical Warning	This service provides the basic device inventory information for EqualLogic Groups	- Group Name - Group URL - Member Count - Volume Count
Dell EMC Storage MD-Series Information	The following states are possible: OK Unknown Critical Warning	This service provides the basic device inventory information for PowerVault MD-Series Storage Arrays	- Storage Name - Product ID - Service Tag - World-wide ID

For attributes information on various components, see [About Monitoring Component Health of Dell EMC Devices](#).

Viewing device information

To view the information about Dell EMC devices once the **Dell EMC Server Information** service is run, navigate to **Current Status > Services** in the Nagios Core console in the left pane. The device information is displayed in the right pane.

Viewing Dell EMC devices in the Nagios Core console

To view the Dell EMC devices in the Nagios Core console, ensure that the devices are already discovered and inventoried. You can view the discovered Dell EMC devices in Nagios Core in the **Hosts** or the **Services** view:

- 1 To view the hosts in the Nagios Core, select **Hosts** under **Current Status** in the left pane.
The hosts are displayed in the right pane.

2 To view the services associated with the hosts in the Nagios Core, select **Services** under **Current Status** in the left pane. The services are displayed in the right pane.

DELL EMC

Monitoring Dell EMC devices

You can monitor the aspects of Dell EMC devices as explained in the following sections.

Topics:

- Overall health status of the Dell EMC devices
- Monitoring component health of Dell EMC devices
- Monitoring SNMP alerts

Overall health status of the Dell EMC devices

You can monitor the overall health status of the Dell EMC devices in the Nagios Core console. The overall health status is an aggregate status of the components of the supported Dell EMC devices.

About overall health status

Overall health status of a device is polled periodically based on the configured interval. By default, the Overall Health Status service is scheduled once an hour.

Table 18. Overall health Status information

Service	Status	Description	Attributes displayed when using WSMAN	Attributes displayed when using SNMP
Dell EMC Server Overall Health Status	The following states are possible for the supported Dell EMC devices: • OK • Warning • Unknown • Critical	Provides global health status of Dell EMC Servers.	• Overall System • Battery • Memory • Voltage • Storage • Power Supply • Fan • Processor • Temperature	• Overall System • Temperature • Chassis • Battery • Power Supply NOTE: Signifies the overall status of the Power supply without considering the redundancy status. • Voltage • Power Unit NOTE: Signifies the overall Power supply redundancy status.

Service	Status	Description	Attributes displayed when using WSMAN	Attributes displayed when using SNMP
				- Amperage - Memory - Processor - Cooling Unit NOTE: Signifies the overall Fan redundancy status. - Storage - Chassis Intrusion - Fan NOTE: Signifies the overall Fan status without considering the redundancy status.
Dell EMC Chassis Overall Health Status		Provides global health status of Dell EMC Chassis.	Overall Chassis	Overall Chassis
Dell EMC Storage PS-Series Member Overall Health		Provides global health status of EqualLogic Storage Arrays.	NA	Overall Member
Dell EMC Storage SC-Series Overall Health Status		Provides global health status of Compellent Storage Arrays.	NA	Overall Storage Center
Dell EMC Storage SC-Series Controller Overall Health Status		Provides global health status of Compellent Storage Array's controller.	NA	Overall Controller
Dell EMC Storage MD-Series Overall Health Status		Provides global health status of PowerVault MD Storage Arrays.	NA	Overall Storage Array

NOTE: Status of Storage attribute is representative of cumulative health status of storage components like physical disk, virtual disk, controller, and so on.

Viewing overall health status

Before you monitor the health of the discovered Dell EMC devices in your data center environment, ensure that the discovered devices are reachable.

To view the overall health of Dell EMC devices:

- 1 In Nagios Core user interface, under **Current Status**, select **Services**.
- 2 Select the associated service to view the overall health status.

Health polling of servers is done through iDRAC with LC and the corresponding objects are shown in their respective health service with proper severity health color.

Monitoring component health of Dell EMC devices

You can monitor the health of individual components of the supported Dell EMC devices.

About monitoring component health of Dell EMC devices

This is a periodic poll based health monitoring of a Dell EMC device's component level health status.

Once the discovery utility is run with the relevant option, the corresponding services are created. These services run periodically and update the overall health of the components. The component's status and information are displayed in the Nagios Core user interface.

The format of the component information in the Status Information column is <Attribute>=<Value>, <Attribute>=<Value>.

For example: Status=CRITICAL, FQDD=Fan.Embedded.1, State=Enabled

Table 19. Dell EMC device's component health information

Service	Status	Description	Attributes displayed when using WSMAN	Attributes displayed when using SNMP
Dell EMC Server Memory Status	The following states are possible: • OK • Warning • Unknown • Critical	Provides the worst case aggregate health status of the memory in Dell EMC Servers.	• Status • FQDD • PartNumber • Size(GB) • Speed(MHz) • Type	• Status • FQDD • State • PartNumber • Size(GB) • Speed(MHz) • Type
Dell EMC Server Physical Disk Status		Provides the worst case aggregate health status of the physical disks in Dell EMC Servers.	• Status • Fully Qualified Device Descriptor (FQDD) • State • FirmwareVersion • FreeSpace(GB) • Media Type • Product ID • Serial No • Size(GB)	• Status • FQDD • State • FirmwareVersion • FreeSpace(GB) • Media Type • Product ID • Serial No • Size(GB)
Dell EMC Server Virtual Disk Status		Provides the worst case aggregate health status of the virtual disks in Dell EMC Servers.	• Status • FQDD • State • Layout • Media Type • ReadPolicy • Size(GB)	• Status • FQDD • State • Layout • Media Type • ReadPolicy • Size(GB)

Service	Status	Description	Attributes displayed when using WSMAN	Attributes displayed when using SNMP
			- StripeSize - WritePolicy	- StripeSize - WritePolicy
Dell EMC Server Fan Status		Provides overall health status of the fans in Dell EMC Server without considering the redundancy status.	- Status - FQDD - State - Speed(RPM)	- Status - FQDD - State - Speed(RPM)
Dell EMC Server Battery Status		Provides overall health status of the battery in Dell EMC Servers.	- Status - Location - State - Reading	- Status - Location - State - Reading
Dell EMC Server Intrusion Status		Provides overall health status of the chassis intrusion in Dell EMC Servers.	- Status - Location - State - Reading	- Status - Location - State - Reading - Type
Dell EMC Server Network Device Status		Provides the worst case aggregate health status of the NIC in Dell EMC Servers.	- ConnectionStatus - FQDD - FirmwareVersion - LinkSpeed - Name	- ConnectionStatus - FQDD - Name
Dell EMC Server CPU Status		Provides overall health status of the CPUs in Dell EMC Servers.	- Status - FQDD - CoreCount - CurrentSpeed(GHz) - Name	- Status - FQDD - State - CoreCount - CurrentSpeed(GHz) - Name
Dell EMC Server Power Supply Status		Provides overall health status of the power supplies in Dell EMC Server without considering the redundancy status.	- Status - FQDD - FirmwareVersion - InputVoltage(V) - InputWattage(W) - OutputWattage(W) - Redundancy	- Status - FQDD - CapabilitiesState - InputVoltage(V) - InputWattage(W) - OutputWattage(W) - SensorState
Dell EMC Server Temperature Probe Status		Provides overall health status of the temperature probe in Dell EMC Servers.	- Status - Location - State	- Status - Location - State

Service	Status	Description	Attributes displayed when using WSMAN	Attributes displayed when using SNMP
			Reading(degree Celsius)	Reading(degree Celsius)
Dell EMC Server Voltage Probe Status		Provides overall health status of the voltage probe in Dell EMC Servers.	- Status - Location - State - Reading(degree Celsius)	- Status - Location - State - Reading(V) or Reading
Dell EMC Server Controller Status		Provides the worst case aggregate health status of the storage controllers in Dell EMC Servers.	- Status - FQDD - CacheSize(MB) - FirmwareVersion - Name	- Status - FQDD - CacheSize(MB) - FirmwareVersion - Name
Dell EMC Server Amperage Probe Status		Provides overall health status of the amperage probe in Dell EMC Servers.	- Status - Location - State - Reading(A) or Reading(W)	- Status - Location - State - Reading(A) or Reading(W)
Dell EMC Server SD Card Status		Provides overall health status of the SD card in Dell EMC Servers.	- Status - FQDD - State - AvailableSpace(GB) - InitializedState - Size(GB) - WriteProtected	Not Available
Dell EMC Server FC NIC Status		Provides overall health status of the FC NIC in Dell EMC Servers.	- ConnectionStatus - FQDD - FirmwareVersion - LinkSpeed - Name	Not Available
Dell EMC Server Warranty Information		Provides warranty information status for the Dell EMC Servers.	- ServiceTag - Service Level Details - Item number - Device Type - Ship Date(UTC) - Start Date(UTC) - End Date(UTC) - Days Remaining	- ServiceTag - Service Level Details - Item number - Device Type - Ship Date(UTC) - Start Date(UTC) - End Date(UTC) - Days Remaining

Table 20. Dell EMC Chassis component health information

Service	Status	Description	Attributes Displayed when using WSMAN
Dell EMC Chassis Physical Disk Status Applicable only to PowerEdge VRTX chassis.	The following states are possible: • OK • Warning • Unknown • Critical	Provides the worst case aggregate health status of the physical disks in Dell EMC Chassis.	• Status • FQDD • Capacity(GB) • FirmwareVersion • FreeSpace(GB) • MediaType • Model • PartNumber • SecurityState • Slot
Dell EMC Chassis Virtual Disk Status Applicable only to PowerEdge VRTX chassis.		Provides the worst case aggregate health status of the virtual disks in Dell EMC Chassis.	• Status • FQDD • BusProtocol • Capacity(GB) • MediaType • Name • RAIDTypes • ReadPolicy • StripeSize • WritePolicy
Dell EMC Chassis PCIe Devices Status		Provides the worst case aggregate health status of all the Dell EMC Chassis PCIe device instances	• FQDD • Name • AssignedBlade • AssignedSlot • Fabric • PCIeSlot • PowerState
Dell EMC Chassis Fan Status		Provides the worst case aggregate health status of the fans in Dell EMC Chassis.	• Status • FQDD • Name • Slot • Speed(RPM)
Dell EMC Chassis Power Supply Status		Provides the worst case aggregate health status of the power supply in Dell EMC Chassis.	• Status • FQDD • InputCurrent(A) • InputVoltage(V) • Name • OutputPower(W) • PartNumber

Service	Status	Description	Attributes Displayed when using WSMAN
			Slot
Dell EMC Chassis Controller Status Applicable only to PowerEdge VRTX chassis.		Provides the worst case aggregate health status of the storage controllers in Dell EMC Chassis.	- Status - FQDD - CacheSize(MB) - FirmwareVersion - Name - PatrolReadState - SecurityStatus - SlotType
Dell EMC Chassis Enclosure Status Applicable only to PowerEdge VRTX chassis.		Provides the worst case aggregate health status of the enclosure in Dell EMC Chassis.	- Status - FQDD - BayID - Connector - FirmwareVersion - SlotCount
Dell EMC Chassis IO Module Status		Provides the worst case aggregate health status of the IO module in Dell EMC Chassis.	- Status - FQDD - FabricType - IPv4Address - LaunchURL - Name - PartNumber - Slot
Dell EMC Chassis Slot Information		Provides the worst case aggregate health status of the slot in Dell EMC Chassis.	- Status - SlotNumber - HostName - Model - ServiceTag - iDRACIP
Dell EMC Chassis KVM Status		Provides the worst case aggregate health status of the KVM (Keyboard, Video, Mouse) in Dell EMC Chassis.	- Status - Name
Dell EMC Chassis Warranty Information		Provides warranty information status for the Dell EMC Chassis.	- ServiceTag - Service Level Details - Item number - Device Type - Ship Date(UTC) - Start Date(UTC) - End Date(UTC)

Service	Status	Description	Attributes Displayed when using WSMAN
			Days Remaining

Table 21. EqualLogic component health information

Service	Status	Description	Attributes Displayed when using SNMP
Dell EMC Storage PS-Series Member Physical Disk Status	The following states are possible: - OK - Warning - Unknown - Critical	Provides the worst case aggregate health status of the physical disks in the EqualLogic member.	- Status - Slot - Model - SerialNumber - FirmwareVersion - TotalSize(GB)
Dell EMC Storage PS-Series Group Volume Status		Provides the worst case aggregate health status of the EqualLogic Group volume status.	- Status - Name - TotalSize(GB) - AssociatedPool
Dell EMC Storage PS-Series Group Storage Pool Information		Provides the worst case aggregate health status of all the EqualLogic storage arrays in a storage pool.	- Name - MemberCount - VolumeCount
Dell EMC Storage PS-Series Group Warranty Information		Provides warranty information status for the EqualLogic storage arrays.	- ServiceTag - Service Level Details - Item number - Device Type - Ship Date(UTC) - Start Date(UTC) - End Date(UTC) - Days Remaining

Table 22. Compellent component health information

Service	Status	Description	Attributes Displayed when using SNMP
Dell EMC Storage SC-Series Physical Disk Status	The following states are possible: - OK - Warning - Unknown - Critical	Provides the worst case aggregate health status of the physical disks in Compellent storage arrays.	- Status - Name - DiskEnclosureNumber - BusType - TotalSize(GB)
Dell EMC Storage SC-Series Volume Status		Provides the worst case aggregate health status of the Compellent volume.	- Status - VolumeName

Service	Status	Description	Attributes Displayed when using SNMP
Dell EMC Storage SC-Series Controller Warranty Information		Provides warranty information status for the Compellent storage arrays.	• ServiceTag • Service Level Details • Item number • Device Type • Ship Date(UTC) • Start Date(UTC) • End Date(UTC) • Days Remaining

Table 23. PowerVault MD warranty information

Service	Status	Description	Attributes Displayed when using SNMP
Dell EMC Storage MD-Series Warranty Information	The following states are possible: • OK • Warning • Unknown • Critical	Provides warranty information status for the PowerVault MD storage arrays.	• ServiceTag • Service Level Details • Item number • Device Type • Ship Date(UTC) • Start Date(UTC) • End Date(UTC) • Days Remaining

NOTE:

For more information about monitoring the health of the Compellent controllers, see the specific *Dell Compellent Controllers User's Guide* at Dell.com/support.

The Dell EMC Chassis enclosure status will display the **Primary** Status of the Enclosure only. For more information, see Dell PowerEdge VRTX Chassis console or the Dell PowerEdge VRTX chassis User's Guide at Dell.com/support.

NOTE:

Table 24. Units and description

Unit	Description
GHz	Giga Hertz
W	Watt
GB	Giga Byte
RPM	Revolutions Per Minute
A	Ampere
V	Volts
MB	Mega Bytes

By default, the preceding services are scheduled once every four hours.

Monitoring component health status of Dell EMC devices

To monitor the component health status of Dell EMC devices:

- 1 In Nagios Core user interface, under **Current Status**, select **Services**.
- 2 Select the associated service to monitor the health of Dell EMC device.
Health monitoring of Dell EMC devices is performed through iDRAC with LC and corresponding details are shown in their respective component health service with proper severity health color.

Monitoring SNMP alerts

About SNMP alert monitoring

You can asynchronously receive the SNMP alerts forwarded from the devices.

Once an SNMP alert is received, the respective device's service will display the alert summary message and alert severity of the last received alert in the Nagios Core console.

Table 25. Dell trap information

Service	Status	Description
Dell EMC Server Traps	The following states are possible: • OK • Warning • Unknown • Critical	Provides trap Information of the Dell EMC Server raised through agent-free method.
Dell EMC Chassis Traps	The following states are possible: • OK • Warning • Unknown • Critical	Provides trap Information of the M1000e, VRTX, and FX2/FX2s Chassis.
Dell EMC Storage PS-Series Member Traps	The following states are possible: • OK • Warning • Unknown • Critical	Provides trap Information of the EqualLogic PS-Series storage Arrays.
Dell EMC Storage PS-Series Group Traps	The following states are possible: • OK • Warning • Unknown • Critical	Provides trap Information of the EqualLogic PS-Series storage Arrays.

Service	Status	Description
Dell EMC Storage SC-Series Management Traps	The following states are possible: • OK • Warning • Unknown • Critical	Provides trap information of the Compellent SC-Series storage Arrays
Dell EMC Storage SC-Series Controller Traps	The following states are possible: • OK • Warning • Unknown • Critical	Provides trap Information of the Compellent SC-Series storage Arrays.
Dell EMC Storage MD-Series Traps	The following states are possible: • OK • Warning • Unknown • Critical	Provides trap Information of the PowerVault MD-Series storage arrays.

Viewing SNMP alerts

Prerequisites:

- Nagios Core with SNMPTT is installed and configured and the Dell integration on SNMPTT is configured.
- SNMP Trap destination is configured with Nagios Core server in the supported Dell EMC devices.

 **NOTE:** To receive SNMP traps from PowerVault MD 34/38 series storage arrays, SNMP trap destination must be configured for that device in the Modular Disk Storage Manager (MDSM) console.

For information on configuring SNMP Trap destination in the iDRAC interface, see [Appendix](#).

To view SNMP alerts:

In Nagios Core user interface, under **Current Status**, select **Services** and then navigate to the respective Dell EMC device specific trap service.

Displays the last received SNMP alert in the status information and the severity of the alert is updated in the status. To view all the SNMP alerts that were received, select **Reports > Alerts > History**.

Launching Dell EMC device specific consoles

To launch console for a supported Dell EMC device:

- 1 In Nagios Core console, under **Current Status**, select any of the following:
 - **Hosts**
 - **Services**
 - **Host Groups > <Dell EMC Device>**
- 2 Click  (**Perform Extra Host Actions** icon) adjacent to the Dell EMC device.
The respective Dell EMC console is launched in a new window.

Dell EMC devices and their consoles

You can launch various Dell EMC consoles from the supported Dell EMC devices to get more information about the Dell EMC devices you are monitoring.

Table 26. Dell EMC devices and their consoles

Dell Device	Applicable Console
Dell EMC Servers, DSS and HCI Platforms	Integrated Dell Remote Access Controller Console
PowerEdge M1000e Chassis	Chassis Management Controller Console
PowerEdge VRTX Chassis	Chassis Management Controller Console
PowerEdge FX2/FX2s Chassis	Chassis Management Controller Console
Compellent SC-Series Storage Arrays	Dell EMC Compellent Storage Manager Console
EqualLogic PS-Series Storage Arrays	EqualLogic Group Manager Console

Warranty information for Dell EMC devices

With this feature, you can access the warranty information for the discovered Dell EMC devices. This feature allows you to monitor the Dell EMC device's warranty details in the Nagios Core console. An active Internet connection is required to retrieve the warranty information. If you do not have direct internet access and are using proxy settings to access the internet, ensure that you resolve the host name `api.dell.com` in the `etc/hosts` file.

Warranty information attributes

The warranty information for the respective Dell EMC devices will be displayed in the Nagios core console. The Dell EMC devices are polled for their warranty information at regular intervals. The default schedule for warranty polls on the discovered devices is once every 24 hours.

Once a discovered device is polled for its warranty information, the following warranty attributes will be displayed in the Nagios Core console:

- **ServiceTag** – Service tag for the discovered device.
- **Service Level Details** – Description of the type of warranty.
- **Item number** – Dell item number for this type of warranty.
- **Device Type** – Type of warranty.
- **Ship Date(UTC)** – Date the asset was shipped.
- **Start Date(UTC)** – Date when the warranty begins.
- **End Date(UTC)** – Date when the warranty ends.
- **Days Remaining** – Number of days left for the warranty to expire.

The warranty information severity will be determined based on the warranty parameter definitions and has the following severities:

- **Normal** - If the warranty is due to expire in more than <Warning> days. The default value is always greater than 30 days.
- **Warning** - If the warranty is due to expire within <Critical> to <Warning>days. The default value is 30 days.
- **Critical** - If the warranty is due to expire within <Critical> days. The default value is 10 days.
- **Unknown** - If the warranty information cannot be retrieved.

WarrantyURL - The warranty URL address.

Configuring the Dell EMC warranty information parameters

You can configure the warranty related parameters manually. To customize these parameters based on your requirements, navigate to `<NAGIOS_HOME>/dell/resources/dell_pluginconfig.cfg` file and edit the default numerical values.

For example:

If you wish to receive a **Critical** warranty status notification for a discovered Dell EMC device earlier than 10 days, which is the default value for a critical status notification, navigate to `<NAGIOS_HOME>/dell/resources/dell_pluginconfig.cfg` file and change the default setting of this parameter from `RemainingDaysCritical=10` to `RemainingDaysCritical=20`.

NOTE: While configuring the Warranty information parameters, ensure the following:

- Provide positive numeric values only. In case any value other than a numeric is provided, the warranty information severity will be in the **Unknown** state while the warranty details will be displayed.
- Do not change any of the other key values in the `dell_pluginconfig.cfg` file other than the numerical values.
- Provide a value for `RemainingDaysWarning` parameter that is greater than the value provided for the `RemainingDaysCritical` parameter and that these values are always between 0 to 365. In case of negative values for these parameters, the warranty information severity will be in the **Unknown** state while the warranty details will be displayed.
- In case there is any change in a discovered device's IP address, rediscover the device again to receive correct warranty information for that device.

NOTE: The warranty status will be determined based on the Configured warranty, critical thresholds and maximum value of the days remaining.

The value of the warranty status will be shown as **Critical**, when the device warranty has expired.

Viewing warranty information

Before you can view the warranty information for the discovered Dell EMC devices, ensure the following:

- You have an active Internet connection.
- You have configured the warranty report parameters correctly in the `dell_pluginconfig.cfg` file available in the `<NAGIOS_HOME>/dell/resources` folder.
- The values for the `RemainingDaysWarning` and `RemainingDaysCritical` are configured appropriately. If they are not, the warranty will be in the **Unknown** state.
- The discovered device has a valid service tag.

Once a device has been successfully discovered, its warranty information is displayed under the **Status Information** column. To view the details for a Dell EMC device,

- 1 Discover a Dell EMC device.
- 2 Click on the **<Dell EMC device> Warranty Information** under services.
The details for the selected device are displayed in the **Service State Information** page.

For example:

To view the warranty service information for VRTX Chassis, click on **Dell EMC Chassis Warranty Information**.

NOTE: In case of EqualLogic storage arrays, the warranty service will be associated with the EqualLogic Member IP only.

In case of Compellent storage arrays, the warranty service will be associated with the Compellent Controller IP only.

Removing Dell EMC devices

You can remove a Dell EMC device that you do not want to monitor.

- 1 Navigate to `<NAGIOS_HOME>/dell/config/objects`, and delete the corresponding `<IP OR FQDN>.cfg` file.
- 2 For completing the removal of the Dell EMC device, restart the Nagios Core services by running the following command: `service nagios restart`.

Knowledge Base (KB) messages for the generated alerts

You can get more information about the SNMP alerts generated by the discovered Dell EMC devices from the KB messages for that device in the Nagios Core console.

Viewing KB messages

To view the KB messages for an SNMP alert generated by a discovered Dell EMC device complete the following steps:

- 1 Log in to the Nagios Core console.
- 2 In the left pane, click on **Services** under **Current Status**.
- 3 Navigate to the respective device trap or alert under **Service**, right click on **More Information** hyperlink under **Status Information** and then select **Open in new tab**.
The KB messages for the respective device is displayed in a new tab.
- 4 In the KB messages page, search for the respective event ID or the KB message as displayed in the Nagios Core console to view further details about this alert.

For Example:

To view the KB messages for Chassis traps:

- 1 Scroll down to Dell Chassis Traps under **Service**, right click on **More Information** hyperlink under **Status Information** and then select **Open in new tab**.
- 2 Search for the respective event ID or KB message as generated by the Dell Chassis Traps such as LIC212 to view further details about this Dell chassis alert.

NOTE: If you are not able to find the KB messages for any of the generated alerts by the process described above, go to "[Dell.com/support/article/us/en/19](https://dell.com/support/article/us/en/19)" and search for the KB messages using the event ID or KB message as generated by the Dell EMC device.

NOTE: KB information is not available for Dell Compellent Storage Arrays and Dell PowerVault MD-Series Storage Arrays.

Troubleshooting

This section lists the problems that you may encounter while using the Dell EMC OpenManage Plug-in for Nagios Core and their workarounds.

Ensure that you meet the requirements, or perform the steps listed in this section.

SNMP traps are not received from the Dell EMC devices in the Nagios Core Console for Ubuntu setup.

Resolution : Replace `#!/bin/sh` to `#!/bin/bash` in `<NAGIOS_HOME>/libexec/eventhandlers/submit_check_result` and then, restart SNMPTT and Nagios service.

Nagios console doesn't get eqlMemberGatewayIPAddrChanged trap

Resolution : After changing the EqualLogic Member Gateway IP address, you need to make sure that the connectivity from EqualLogic member or EqualLogic Group to trap listener is available.

Compellent Storage Manager UI fails to launch if the Compellent firmware version is 7.1.12.

When you launch a console for Compellent device with firmware version 7.1.12, the page will display a message asking you to download **Enterprise Manager Client**.

Resolution : Use **Enterprise Manager Client** for managing Compellent devices.

The Dell EMC OpenManage Plug-in for Nagios Core installation script is failing

- 1 You have adequate permissions to run the script.
Recommended: Nagios Administrator.
- 2 The prerequisites as mentioned in the Installation Guide are met.
- 3 You have provided correct inputs to the installation script.

The Dell EMC OpenManage Plug-in for Nagios Core uninstallation script is failing

- 1 You have adequate permissions to run the script.
Recommended: Nagios Administrator.
- 2 The uninstallation script is running from the location where the Dell EMC OpenManage Plug-in is installed.

The discovery script is failing to execute

- 1 The discovery script has appropriate permissions.
Recommended: Nagios Administrator.
- 2 The appropriate arguments are provided while running the script.

The discovery script is not creating the host and service definition file for IPv4 or IPv6 addresses or hosts when the protocol selected is 1 (SNMP)

- 1 Net-SNMP is installed.
- 2 The IP addresses or hosts are reachable.
- 3 SNMP is enabled on the given IP addresses or hosts.
- 4 The appropriate protocol credentials are correctly configured in the following files before running a discovery:
`dell_resource.cfg`
`.dell_device_comm_params.cfg`
- 5 For an IPv6 address, ensure that the Perl Module Socket6 is installed in the same Perl library path.
- 6 At least one of the applicable service is enabled in the following service template:
`dell_server_services_template.cfg`

The discovery script is not creating the host and service definition file for IPv4 or IPv6 addresses or hosts when the protocol selected is 2 (WSMan)

- 1 Openwsman and its Perl binding are installed.
- 2 The IP addresses or hosts are reachable.
- 3 The appropriate protocol credentials are correctly configured in the following files before running a discovery:
`dell_resource.cfg`
`.dell_device_comm_params.cfg`
- 4 For an IPv6 address, ensure that the Perl Module Socket6 is installed in the same Perl library path.
- 5 At least one of the applicable service is enabled in the following service template:
`dell_server_services_template.cfg`

The Dell EMC device's IP address or host name changes after discovery of the device

Remove the old configuration file and rediscover the Dell EMC device using a new IP address or hostname.

The Nagios Core Console is not displaying the Dell EMC devices that are discovered using the Dell EMC discovery script

- 1 The host and service definition files exist in the `<NAGIOS_HOME>/dell/config/objects` folder.
- 2 The Nagios service has been restarted after running a discovery.
- 3 The host and service definition files have appropriate permissions.

The Nagios Core Console is not displaying the Trap Service for Dell EMC devices that are discovered using the Dell EMC discovery script

- 1 SNMPTT is installed.
- 2 If SNMPTT is not installed, then the trap service is not created for any of the discovered Dell EMC device.
- 3 After you install SNMPTT, ensure that the Trap Integration is performed.

To perform Trap Integration, from `<NAGIOS_HOME>/dell/install`, run the command:

```
./install.sh
```

- 4 Once the trap integration is complete, restart the SNMPTT service, run the command:
`service snmptt restart`

The Dell EMC OpenManage Plug-in specific services are displaying the message, “Error while creating SNMP Session”

- 1 The recommended versions of Net-SNMP and Net-IP are installed. If you are using IPv6, then the Perl module Socket6 should also be installed.
- 2 The IP addresses or hosts provided are reachable.
- 3 SNMP is enabled on the IP addresses or hosts.
- 4 The appropriate SNMP parameters are correctly configured in the following files:

```
dell_resource.cfg
```

```
.dell_device_comm_params.cfg
```

Dell EMC OpenManage Plug-in specific services are displaying the message, “WSMan Error while communicating with host”

- 1 Openwsman and its Perl binding and Net-IP are installed.
- 2 The IP addresses or hosts provided are reachable.

- 3 The appropriate WSMAN parameters are correctly configured in the following files:

```
dell_resource.cfg
```

```
.dell_device_comm_params.cfg
```

Dell EMC OpenManage Plug-in specific services are displaying the message, “Component Information = UNKNOWN”

NOTE: This is an expected message if the component is not available in the discovered Dell EMC device.

If the component is available and you are still receiving the message, then this message is due to protocol time-out. Set the required protocol specific time-out values in the `.dell_device_comm_params.cfg` file.

Unable to view the SNMP alerts generated by the Dell EMC device in the Nagios Core Console

- 1 Perform Trap Integration, from `<NAGIOS_HOME>/dell/install`, run the command:
`./install.sh`
- 2 The binary `<NAGIOS_HOME>/libexec/eventhandlers/submit_check_result` is present.
- 3 The trap configuration file `Dell_Agent_free_Server_Traps.conf` and the binary `submit_check_result` have appropriate permissions.

Unable to monitor the RACADM attributes services such as Speed(RPM), InputCurrent(A), InputVoltage(V), and OutputPower(W) and Status (Dell EMC Chassis I/O Module Status) for Dell EMC chassis devices in the Nagios Core Console

- 1 Install RACADM.
- 2 Navigate to `<NAGIOS_HOME>/dell/install`, run the command:
`./install.sh racadm`
- 3 Restart Nagios Core services.
- 4 Rediscover the Dell EMC chassis device.

For more information on downloading and installing RACADM, go to en.community.dell.com/techcenter/systems-management/w/wiki/3205.racadm-command-line-interface-for-drac

Unable to monitor the Warranty information for the discovered Dell EMC devices in the Nagios Core Console

- Ensure that you have an active internet connection. If you do not have direct internet access and are using proxy settings to access the internet, ensure that you resolve the host name `api.dell.com` in the `etc/hosts` file.

If you are still not able to view the warranty information, then ensure that you have Java version 1.6 or later installed in your system. If Java was installed after the Dell EMC Plug-in was installed, then perform the following steps:

- 1 Install JAVA.
- 2 Navigate to `<NAGIOS_HOME>/dell/install`, run the command:
`./install.sh java`
- 3 Restart Nagios Core services.
- 4 Rediscover the Dell EMC device.

The Overall Health status is not getting refreshed after receiving a Dell EMC device alert

If the Overall Health service is not created for a discovered Dell EMC device, then the Dell EMC device trap will not trigger an Overall health status. If Overall health service exists for a device, then ensure the following:

- 1 The file `<NAGIOS_HOME>/libexec/eventhandlers/submit_check_result` is present.
- 2 The trap configuration file `Dell_Agent_free_Server_Traps.conf` and the binary `submit_check_result` have appropriate permissions.
- 3 The SNMPTT process has appropriate permissions to run scripts in `<NAGIOS_HOME>/dell/scripts`.

Where do I find the Openwsman distribution and its Perl binding?

If the system has default Perl version (installed as part of operating system), go to "Build.opensuse.org/package/show/Openwsman/openwsman" and download the Openwsman library and its Perl binding.

If you have installed a Perl version other than the default version, or the Perl binding is not available then go to "[Github.com/Openwsman/openwsman](https://github.com/Openwsman/openwsman)" and follow the instructions to compile and use.

Unable to view the KB information from the device trap after the Nagios Management Server IP address is changed

The new IP address has to be updated in the following configuration files:

- `Dell_Agent_free_Server_Traps.conf`
- `Dell_Chassis_Traps.conf`
- `Dell_EqualLogic_Traps.conf`

NOTE: By default, the configuration files are available at the location: `<Nagios_Home>/dell/config/templates`

To update the new IP address in the above mentioned configuration files, run the following command and then restart snmptt service:

```
sed -i s/<Old IP>/<New IP>/g <Nagios_Home>/dell/config/templates/Dell*_Traps.conf
```

Frequently asked questions

1 **Question:** Can you provide information on Licensing of Dell EMC OpenManage Plug-in for Nagios Core?

Answer: You can install and use this plug-in for free.

2 **Question:** What are the Dell EMC hardware models supported by the plug-in?

Answer: For the list of supported Dell EMC platforms, see [Support Matrix](#).

3 **Question:** I have earlier generation of servers (9th Generation – 11th Generation) in my data center. Can I still monitor them using the plug-in?

Answer: No, you cannot monitor earlier generations of servers (9th Generation through 11th Generation) using this plug-in. You can only monitor Dell servers through iDRAC with LC, supported for 12th and later generations of PowerEdge servers using this Plug-in. There are other plug-ins available on Nagios Exchange using which you can monitor earlier generation of servers.

4 **Question:** What is the difference between in-band versus out-of-band (OOB) method of monitoring Dell servers?

Answer: There are two ways to monitor Dell servers, one is by using in-band method through software called OpenManage Server Administrator (OMSA) installed on a server operating system and the other is out-of-band method through iDRAC with LC.

iDRAC with LC, a hardware, is on the server motherboard and iDRAC with LC enables systems administrators to monitor and manage dell servers regardless of whether the machine is powered on, or if an operating system is installed or functional. The technology works from any location and without the use of software agents like OMSA. By contrast, in-band management, that is, OMSA must be installed on the server being managed and only works after the machine is booted and the operating system is running and functional. The OMSA software has its limitations such as it does not allow access to BIOS settings, or the reinstallation of the operating system and cannot be used to fix problems that prevent the system from booting.

5 **Question:** Can I monitor Dell servers using OpenManage Server Administrator (OMSA) agent instead of iDRAC with LC using this plug-in?

Answer: No, using this plug-in you cannot monitor Dell servers using OMSA agent. However, there are other plug-ins available on Nagios Exchange using which you can achieve the same. For more information, regarding the list of available Dell EMC Plug-ins, visit URL: exchange.nagios.org/directory/Plugins/Hardware/Server-Hardware/Dell

6 **Question:** How is this plug-in different from other plug-ins available on the Nagios Exchange site?

Answer: The primary functionality of this Plug-in is to monitor Dell servers' hardware through an agent-free, out-of-band method using iDRAC with LC. With this plug-in, you can get a comprehensive hardware-level information on PowerEdge servers including overall and component-level health monitoring through SNMP and WS-MAN protocols. The plug-in enables you to monitor SNMP alerts generated from Dell servers and supports one-to-one iDRAC web console launch to perform further troubleshooting, configuration, and management activities. Some of the capabilities provided here are not available in other plug-ins present on Nagios Exchange.

7 **Question:** What are the languages supported by the plug-in?

Answer: The plug-in currently supports only English language.

Appendix

Configuring SNMP parameters for iDRAC using the iDRAC web console

- 1 Launch the iDRAC (12th and later generation of PowerEdge servers) web console and navigate to **Network > Services** in the console.
- 2 Configure the SNMP Agent properties:
 - a Set Enabled to `True` and SNMP Protocol to `All` (SNMP v1/v2/v3).
 - b Set **SNMP Community Name** with a community string.
 - c Click **Apply** to submit the configuration.

① **NOTE:** The Plug-in communicates with iDRAC using only SNMP v1 or SNMP v2 protocol.

Configuring SNMP parameters for iDRAC using RACADM script

- 1 Launch the iDRAC RACADM CLI by running the following ssh command:


```
ssh root@<iDRAC IP>
```
- 2 Change the command mode to **racadm** by running the following command:


```
racadm
```
- 3 Set the SNMP community string by running the following command:


```
racadm set idrac.SNMP.AgentCommunity <community string>
```
- 4 Enable the SNMP agent by running the following command:


```
racadm set idrac.SNMP.AgentEnable 1
```

(Values: 0 – Disabled, 1 – Enabled)
- 5 Set the SNMP protocol to **All** by running the following command:


```
racadm set idrac.SNMP.SNMPProtocol 0
```

(Values: 0 – All, 1 – SNMPv3)
- 6 Verify the configuration by running the following command:


```
racadm get idrac.SNMP.Alert
```

Configuring SNMP trap destination address for iDRAC using iDRAC web console

- 1 Log in to iDRAC.
- 2 Select **Overview > Alerts**.
- 3 In the right pane, perform the following actions:
 - In the **Alerts** section, enable **Alerts**.
 - In the **Alerts Filter section**, select the required fields under **Category** and **Severity**.
You will not receive any SNMP alerts if none of these fields are selected.
 - In the **Alerts and Remote System Log Configuration** section, select the required fields thereby configuring the SNMP alerts.

- 4 In the right pane, click on the **SNMP and Email Settings** tab and then perform the following actions:
 - In the **IP Destination List** section, populate the **Destination Address** fields as per your requirement and ensure that its respective **State** checkboxes are selected and then click **Apply**.
 - Configure the **Community String** and the **SNMP Alert Port Number** at the bottom of the **IP Destination List** section as required and then click **Apply**.
 - In the **SNMP Trap Format** section, select the required SNMP trap format and then click **Apply**.

Configuring SNMP trap destination address for iDRAC using RACADM

- 1 Launch the iDRAC RACADM CLI by running the following ssh command:

```
ssh root@<iDRAC IP>
```

- 2 Change the command mode to **racadm** by running the following command:

```
racadm
```

- 3 Set the iDRAC SNMP port for receiving alerts by running the following command:

```
racadm set idrac.SNMP.AlertPort <Trap Port Number>
```

- 4 Enable the SNMP monitoring protocol by running the following command:

```
racadm set idrac.SNMP.TrapFormat <Trap Format>
```

(Values for <Trap Format>: 0–SNMPv1, 1–SNMPv2, 2–SNMPv3)

- 5 Set the SNMP trap destination by running the following command:

```
racadm set iDRAC.SNMP.Alert.DestAddr.<index> <Trap Destination IP Address>
```

(This will override the trap destination address, if any, existing in that index)

- 6 Enable the index by running the following command:

```
racadm set iDRAC.SNMP.Alert.Enable.<index> 1
```

(Only eight trap destinations can be configured in iDRAC. You can only pass a trap destination <index> value from 1 to 8.)

- 7 Then run the following command to enable global e-mail alerting:

```
racadm set iDRAC.IPMILan.AlertEnable 1
```

- 8 Then run the following command to clear all available alert settings:

```
racadm eventfilters set -c idrac.alert.all -a none -n SNMP
```

You can also use the Perl based command line script to configure the SNMP parameters for multiple iDRACs (Dell 12th and later generation of PowerEdge Servers). For more information go to en.community.dell.com/techcenter/systems-management/w/wiki/11460.snmp-parameters-configuration-script-for-dell-idracs

For more information on RACADM commands, see the *iDRAC RACADM Command Line Interface Reference Guide* available at dell.com/iDRACManuals.