Dell EMC OpenManage Plug-in Version 3.1 for Nagios Core

User's Guide

DELL EMC

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.

April 2020

Rev. A00

Contents

1

Introduction to Dell EMC OpenManage Plug-in Version 3.1 for Nagios Core

This guide provides information about usage of Dell EMC OpenManage Plug-in Version 3.1 for Nagios Core and features such as discovering, monitoring, launching consoles, and troubleshooting of the supported Dell EMC devices. Also providing details on the supported Dell EMC devices and frequently asked questions by the customer.

This plug-in provides capabilities to monitor Dell EMC devices and also 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 3.1 for Nagios Core Users Guide*."

2

What is new

Table 1. New features and functionality of Dell EMC OpenManage Plug-in version 31

New Feature	Description
Support for new Dell EMC devices	With this version, you can discover and monitor the following new Dell EMC devices: • Dell EMC PowerEdge MX7000 Modular Chassis • PowerVault ME4 Storage Arrays • Support for iDRAC9 based PowerEdge servers • OEM Servers • Dell EMC Network Switches For more details on device support, see Support matrix in the "*Dell EMC OpenManage Plug-in Version 3.1 for Nagios Core Users Guide*."
Security Enhancement	Enhanced security with AES 256-bit based password encryption in host definition files
OMSDK installation without pip	For those users who do not have permission to install OMSDK with pip. You can install Dell EMC OpenManage Python SDK (OMSDK) without pip. For more details on installation steps, see installation guide at *Dell EMC OpenManage Plug-in Version 3.1 for Nagios Core Installation Guide.*
Component service	• Helps user to see the list of services that are added or to be added to host or host group • Allows users to add and remove services for host or host group
Monitor basic system information including component level.	This version provides basic system information including component level details of the following Dell EMC devices: • iDRAC 9 based PowerEdge servers. • PowerEdge MX7000 chassis • Dell EMC Ready Node VxFlex models • PowerVault ME4 series Storage Arrays
Latest Firmware Version	This version supports the latest firmware versions for the following Dell EMC devices • iDRAC 9 based PowerEdge Servers. • OEM servers • Dell EMC Network Switches • 12th and 13th Generation PowerEdge Servers • 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 • Dell Compellent Storage Arrays
Upgrade	User can upgrade to the latest version of Nagios.
View and monitor SNMP alerts.	View and monitor SNMP alerts from all the supported devices.
Trap based health monitoring.	Trap based health monitoring of all the supported devices.
Launch Dell EMC device-specific consoles.	Supports the launch of the following Dell EMC one-to-one consoles to perform further troubleshooting, configuration, or management activities for the supported Dell EMC devices: • iDRAC Console for OEM servers

New Feature	Description
	• HCI Console Launch for HCI devices • Dell EMC Network Switches • Dell EMC OpenManage Enterprise Modular console for MX7000 • PowerVault Manager console for ME4 devices
View warranty information	This feature allows you to view the warranty information for OEM servers, Dell EMC Network Switches, Dell EMC MX7000 Modular Chassis and ME4 Storage Arrays.
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 OEM servers, HCI Platforms, MX7000 modular chassis and PowerVault ME4 devices.

3

Key features

Table 2. key features of the Dell EMC OpenManage Plug-in Version 3.1 for Nagios Core

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. • Discover of Dell EMC PowerEdge MX7000 modular chassis and Dell EMC Storage ME4 using Rest protocol. • Discover iDRAC devices either using SNMP or WSMan protocol or Redfish protocol . • Dell EMC storage and Dell EMC Network Switch discovery is supported using SNMP protocol. • Dell EMC chassis discovery is supported using WSMan protocol.
Security Enhancement	Enhanced security with AES 256-bit based password encryption in host definition files
Device information	Provides 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. Users can list the services, add, or remove service for host or host group. For more information about the device information, 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 and displays only the last received SNMP alert. To view all received SNMP alerts, browse **Reports** > **Alerts** > **History** in the Nagios Core console. You can view KB information for the generated alerts corresponding to SNMP alerts for faster troubleshooting of the respective alerts. For more information, see **Knowledge Base (KB) messages for the generated alerts** in the *Dell EMC OpenManage Plug-in Version 3.1 for Nagios Core User'sGuide*. **NOTE: KB information is not available for Dell Compellent Storage Arrays, PowerVault MD Storage Arrays, and Dell EMC Networking.**
Launching device-specific consoles	Launches the Dell EMC one-to-one consoles to further troubleshoot and manage. 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.

4

Support matrix

Dell EMC OpenManage Plug-in version 3.1 for Nagios Core supports the Dell EMC devices as listed in the following tables.

Table 3. Support for operating system

Operating System
RHEL 7.7
RHEL 8.0
Ubuntu 18.04.3
Ubuntu 16.04.3
SLES 15 SP1 and 12 SP4

Table 4. Support for Nagios core

Nagios Core
3.5.1
4.4.5

Datacenter Scalable Solutions

Table 5. Supported Datacenter Scalable Solutions.

Datacenter Scalable Solutions (DSS)
DSS 1500
DSS 1510
DSS 2500
DSS 7000
DSS 9620
DSS 7500
DSS 9000R
DSS 9630
DSS 8440
DSS 9600

Hyper-converged Infrastructure (HCI) Platforms

Table 6. Supported HCI Platforms

VxRail Devices	VxFlex	Nutanix XC Devices
VxRail E460	VxFlex Ready Node 840	XC6320-6
VxRail E460F	VxFlex Ready Node 640C	XC430-4 Xpress
VxRail P470	VxFlex Ready Node 740xd	XC430-4

VxRail Devices	VxFlex	Nutanix XC Devices
VxRail P470F		XC630-10
VxRail V470		XC730xd-24
VxRail V470F		XC640-10
VxRail S470		XC740-12
VxRail E560		XC740-12C
VxRail E560F		XC740-12R
VxRail G560		XC740-24
VxRail G560F		XC640-4
VxRail P570		XC6420-6
VxRail P570F		XC-940-24
VxRail P570		XC640-4 Xpress
VxRail S570		XC730-16G
		XC730xd-12
		XC730xd-12C
		XC730xd-12R
		XC6320-6AF
		XC430-8
		XC630-10AF
		XC630-10P
		XC730xd-12R Xpress
		XC730xd-12S
		XC730xd-24
		XC730xd-24S

PowerEdge Servers

Table 7. Supported PowerEdge Servers.

12th generation of PowerEdge servers	13th generation of PowerEdge servers	iDRAC 9 based PowerEdge servers
FM120x4	C4130	R640
M420	FC430	R740
M520	FC630	R740xd
M620	FC830	R940
M820	M630	C6420
R220	M830	M640
R320	R230	FC640
R420	R330	R440
R520	R430	R540
R620	R530	T440
R720xd	R530xd	T640
R820	R630	R6415

12th generation of PowerEdge servers	13th generation of PowerEdge servers	iDRAC 9 based PowerEdge servers
R920	R730	R7415
T320	R730xd	R7425
T420	R830	R240
T620	R930	R340
R720	T130	R740xd2
C6320p	T330	R840
C6320	T430	R940XA
R420xr	T630	T140
	C5230	T340
		FC640
		MX740C
		MX840C
		R6515
		R6525
		C6525
		XR2
		C4140
		R7515
		R7525

PowerEdge Chassis

Table 8. Supported PowerEdge chassis.

PowerEdge Chassis
PowerEdge FX2
PowerEdge FX2s
PowerEdge VRTX
PowerEdge M1000e
PowerEdge MX7000

Compellent SC-Series Storage Arrays

Table 9. Supported Compellent Storage Arrays.

Compellent Storage Series
Compellent Series 40
Compellent SC4020
Compellent SC5020
Compellent SC7020
Compellent SC8000
Compellent SC9000

EqualLogic PS-Series Storage Arrays

Table 10. Supported EqualLogic PS-Series Storage Arrays.

EqualLogic PS-Series	
EqualLogic PS4000	EqualLogic PS6000
EqualLogic PS4110	EqualLogic PS6010
EqualLogic PS4210	EqualLogic PS6610
EqualLogic PS4100	EqualLogic PS6100
	EqualLogic PS6210
	EqualLogic PS6110
	EqualLogic PS6500
	EqualLogic PS6510

PowerVault MD-Series Storage Arrays

Table 11. Supported PowerVault MD-Series Storage Arrays.

PowerVault MD-Series
PowerVault MD3400
PowerVault MD3420
PowerVault MD3460
PowerVault MD3800f
PowerVault MD3800i
PowerVault MD3820f
PowerVault MD3820i
PowerVault MD3860f
PowerVault MD3860i

PowerVault ME4 Storage Arrays

Table 12. Supported PowerVault ME4 Storage Arrays.

PowerVault ME4
PowerVault ME4012
PowerVault ME4024
PowerVault ME4084

NOTE: Fan module location displayed in ME4084 is different from internal Fan location.

Dell EMC Network Switches

Table 13. Supported Network Switches

S Series	Z Series	C Series	FN Series	M Series	N Series
S3124	Z9100-ON	C9010	PowerEdge FN2210S	PowerEdge M I/O Aggregator	N1124T
S3124P	Z9264F	C1048P	PowerEdge FN410S	Power Edge MXL 10/40GbE	N1124P

S Series	Z Series	C Series	FN Series	M Series	N Series
S3124F	Z9332F	C9000	PowerEdge FN410T	MX5108n	N1148T
S3148				MX9116n	N1148P
S3148P					
S3148F					N1108T
S3048					N1524
S4048					N1524P
S4048-ON					N1548
S6010-ON					N1548P
S5048F					N2024
S3100					N2024P
S3048					N2048
S4048T-ON					N2048P
S5048F-ON					
S4112F					
S4112T					
S4128F					
S4128T					
S4148F					
S4148T					
S4148U					
S4148FE					
S4248FB					
S4248FBL					
S5296F					
S5248F					
S5224F					
S5212F					
S5232F					

NOTE: MX5108n and MX9116n switches supports firmware version 10.5.0.5

For information on supported firmware versions for network switches, see Nagios installation guide

5

Device discovery and inventory

Topics:

About device discovery

The monitoring protocols for the supported Dell EMC devices are as follows:

- Dell EMC PowerEdge MX7000 modular chassis and PowerVault ME4 Storage Arrays are discovered using REST protocol.
- Dell EMC Servers are discovered using SNMP or WSMan protocol or Redfish protocol.
- Dell EMC Chassis are discovered using WSMan protocol.
- Dell EMC Storage and Dell EMC Network Switches are discovered using SNMP protocol.

NOTE: For iDRAC firmware version 3.30.30.30 and above are discovered using Redfish.

Use **Dell EMC 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 IP address or FQDN
- Subnet with Mask
- File Containing a list of device IP addresses or FQDNs or Subnet with Mask

NOTE: For monitoring purpose, it is recommended to have read-only permission for the users.

- **NOTE: At a time you can discover a Dell EMC Server using SNMP or WSMan protocol or Redfish. To rediscover a server previously discovered through SNMP protocol with WSMan protocol or Redfish or vice versa, run the Dell EMC Discovery Utility option along with the value of the desired protocol.**

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

  For example:

  To discover a SNMP device through WSMan Protocol using Host name details:

  `python dellemc_nagios_discovery_service_utility.py --host=<host name / IP address> --prefProtocol=2 --http.user=<username> --http.password=<password text> --output.file=/usr/local/nagios/dell/config/objects/`

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

About Dell EMC device discovery utility

To run the **Dell Device Discovery Utility**, browse `<NAGIOS_HOME>/dell/scripts`, and run the following Python command:

```
python dellemc_nagios_discovery_service_utility.py -h
```

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

Table 14. Dell EMC Device Helper Utility options

Options	Description
-h	Displays the list of available options
--host	Host IP address or Host Name that are discovered.
--File	Provides a filename with path containing the IP addresses/ Hostname/Subnet with mask, which is separated by new line.
--subnet	To get the Subnet with mask.
--all	This option is used to display detailed services. If --all parameter is added, the result displays all the detailed services. By default, only basic services are displayed.
--prefProtocol	PrefProtocol used for monitoring Allowed options are 1 (SNMP), 2 (WSMan) and 3 (Redfish). This value is optional. **NOTE: This parameter is applicable only for Dell EMC servers. By default, Server is discovered using Redfish Protocol if Redfish parameters are passed. Else the discovery happens through SNMP if SNMP parameters are passed.**
--output.file	This displays the location where the host file is created in .cfg format. **NOTE: If the option is not provided, it takes `<NAGIOS_HOME>/dell/config/objects` location for creation of host file.**
--logLoc	This parameter takes the log location from the user. **NOTE: If this attribute is not passed, the logs are created in the default location /<NAGIOS_HOME>/var/dell**
--snmp.version	Version of SNMP protocol. Allowed options are 1 (SNMP v1)., 2 (SNMP v2c)
--snmp.community	Community string for SNMP communication Default value is **Public**.
--snmp.port	For SNMP port value allowed value is [1-65535]. Default value is **161**.
--snmp.retries	For SNMP retries count allowed value is [1-10]. Default value is **1**.
--snmp.timeout	SNMP timeout values (in seconds) allowed values are [1-1440]. Default value is **3**.
--http.user	WSMan/REST/Redfish authentication username **NOTE: For monitoring purpose, it is recommended to have read-only permission for the users.**
--http.password	WSMan/REST/Redfish authentication password
--http.timeout	WSMan/REST/Redfish timeout (in seconds) allowed value is [1-1440]. Default value is **30**.
--http.retries	WSMan/REST/Redfish retries count allowed value is [1-10]. Default value is **1**.
--http.port	WSMan/REST/Redfish port details Allowed value is [1-65535]. Default value is **443**.
--enableLog	To enable or disable the logs. If --enable parameter is passed, the logs are created else the logs are not created.

Options	Description
`--force`	--force rewrites the config file.
`--warranty.criticalDays`	Warranty critical days Allowed value is [1-365]. Default value is **10**. **NOTE: The value of Warranty critical days should be less than Warranty warning days.**
`--warranty.warningDays`	Warranty warning days Allowed value is [1-365]. Default value is **30**.
`--nagios.type`	Decides the output format of the host file Allowed options are **0** for .cfg format and **1** for .xml format. Default values are **0**.
`--addservices`	Adding services for monitoring at host or host group level.
`--removeservices`	Removing services from monitoring at host or host group level.
`--hostgroup`	Adding or removing services at host group level
`--excludeinstance`	To exclude instance of a component during monitoring
`--service`	Used along with excludeinstance while providing component name
`--listservices`	To list services of host or multiple hosts(using -File,--subnet) or hostgroup

Table 15. Dell EMC Device Helper Utility Mandatory Parameters

`--host`
`--filename`
`--subnet`
	These parameters define the value of the Dell EMC device to be discovered.

`--snmp.version`	This parameter is mandatory for a Dell EMC device that is discovered through SNMP.
`--http.user`	This parameter is mandatory for a Dell EMC device that is discovered through WSMan/Redfish.
`--http.password`	This parameter is mandatory for a Dell EMC device that is discovered through WSMan/Redfish.
`--output.file`	This displays the location where the host file is created in .cfg format.

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

- If you run the Python command `python dellemc_nagios_discovery_service_utility.py` without the `--all` 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 `python dellemc_nagios_discovery_service_utility.py` with the `--all` option, detailed services are created as listed in the table below, and are displayed in the Nagios Core console under **Services**:

Table 16. Default services created for Dell EMC Servers based on the selected protocol

Services	SNMP	WSMan Protocol	Redfish Protocol
Basic Services			
Dell EMC Server Overall Health Status	√	√	√
Dell EMC Server Information	√	√	√
Dell EMC Server Traps	√	√	√

Services	SNMP	WSMan Protocol	Redfish Protocol
Detailed Services			
Dell EMC Memory Status	√	√	√
Dell EMC Server Physical Disk Status	√	√	√
Dell EMC Server Disk Group Status	√	√	√
Dell EMC Server Fan Status	√	√	√
Dell EMC Server Battery Status	√	√	X
Dell EMC Server Intrusion Status	√	√	X
Dell EMC Server Network Device Status	√	√	√
Dell EMC Server Voltage Probe Status	√	√	√
Dell EMC Server Controller Status	√	√	√
Dell EMC Server Amperage Probe Status	√	√	X
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	√	√	√
Dell EMC Server GPU and General Purpose GPUs	X	X	√

NOTE: Redfish protocol supports iDRAC firmware version 3.30.30.30 and above.

Table 17. 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 Server Slot Information
Dell EMC Chassis Storage Slot Information
Dell EMC Chassis I/O Module Status
Dell EMC Chassis Power Supply Status
Dell EMC Chassis KVM Status (Not applicable for MX7000)
Dell EMC Chassis Warranty Information
Dell EMC Chassis Enclosure Status (This service is applicable to PowerEdge VRTX Chassis only)

Services
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 Disk Group 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 Management Module Status
Dell EMC Chassis Temperature Probe Status

NOTE: All the detailed service list provided for all Dell EMC chassis also applicable for MX7000 but with REST protocol.

Table 18. Default services created for all Dell EMC Networking based on SNMP protocol

Basic Services
Dell EMC Network Switch Information
Dell EMC Network Switch Overall Health Status
Dell EMC Network Switch Traps
Detailed Services
Dell EMC Network Switch PowerSupply Status (not applicable for firmware version 10)
Dell EMC Network Switch PowerSupplyTray Status
Dell EMC Network Switch Fan Status
Dell EMC Network FanTray Status
Dell EMC Network Switch Processor Status (not applicable for firmware version 10)
Dell EMC Network Switch vFlash Status (not applicable for firmware version 10)
Dell EMC Network Switch Physical Port Status
Dell EMC Network Switch Warranty Information

NOTE: For M-Series and F-Series Dell EMC Network Switch, Dell EMC Network Switch PowerSupply Status, Dell EMC Network Switch PowerSupplyTray Status, Dell EMC Switch Network FanTray Status, Dell EMC Network Switch Fan Status services are not applicable.

Table 19. Default services created for Dell 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 20. 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 Group Storage Pool Information
Dell EMC Storage PS-Series Member Warranty Information

Table 21. 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

Table 22. Default services created for PowerVault ME4-Series Storage Arrays based on REST protocol

Services
Basic Services
Dell EMC Storage ME4-Series ME4 Overall Health Status
Dell EMC Storage ME4-Series ME4 Information
Dell EMC Storage ME4-Series ME4 Traps
Detailed Services
Dell EMC Storage ME4-Series Warranty Information
Dell EMC Storage ME4-Series Controller Status
Dell EMC Storage ME4-Series Fans Status
Dell EMC Storage ME4-Series I/O Module Status
Dell EMC Storage ME4-Series NIC Status
Dell EMC Storage ME4-Series Physical Disk Status
Dell EMC Storage ME4 series Disk Group
Dell EMC Storage ME4-Series Power Supply Status
Dell EMC Storage ME4-Series Storage Pool Status
Dell EMC Storage ME4-Series Storage Enclosure Status
Dell EMC Storage ME4-Series Volume Status

GUI service name and component name

The following table lists GUI naming and its component naming list for the respective host group

Table 23. GUI service name and component name

Host Group	Device Name	GUI Service Name	Component Name	Key attributes for excludeinstance
Dell EMC Agent-free Servers, Dell EMC VxRail, Dell EMC XC, Dell EMC VxFlex	iDRAC	Dell EMC Server Traps	Trap	
		Dell EMC Server Information	System, iDRAC	
		Dell EMC Server Overall Health Status	Subsystem	
		Dell EMC Server Physical Disk Status	PhysicalDisk	FQDD
		Dell EMC Server Battery Status	Sensors_Battery	Location
		Dell EMC Server Fan Status	Sensors_Fan	FQDD
		Dell EMC Server Intrusion Status	Sensors_Intrusion	Location
		Dell EMC Storage ME4 series Disk Group	Disk Group	FQDD
		Dell EMC Server Network Device Status	NIC	FQDD
		Dell EMC Server Voltage Probe Status	Sensors_Voltage	Location
		Dell EMC Server Amperage Probe Status	Sensors_Amperage	Location
		Dell EMC Server Controller Status	Controller	FQDD
		Dell EMC Server Temperature Probe Status	Sensors_Temperature	Location
		Dell EMC Server CPU Status	CPU	FQDD
		Dell EMC Server Power Supply Status	PowerSupply	FQDD
		Dell EMC Server Memory Status	Memory	FQDD
		Dell EMC Server SD Card Status	VFlash	FQDD
		Dell EMC Server FC NIC Status	FC	FQDD
		Dell EMC Server Warranty Information	warranty	
Dell EMC Chassis	CMC	Dell EMC Chassis Traps	Trap	
		Dell EMC Chassis Information	System	
		Dell EMC Chassis Overall Health Status	Subsystem	
		Dell EMC Chassis Warranty Information	warranty	
		Dell EMC Chassis Fan Status	Fan	FQDD
		Dell EMC Chassis Power Supply Status	PowerSupply	FQDD
		Dell EMC Chassis I/O Module Status	IOModule	FQDD

Host Group	Device Name	GUI Service Name	Component Name	Key attributes for excludeinstance
		Dell EMC Chassis Server Slot Information	ComputeModule	ServiceTag
		Dell EMC Chassis Storage Slot Information	StorageModule	ServiceTag
		Dell EMC Chassis Enclosure Status	Enclosure	FQDD
		Dell EMC Chassis Controller Status	Controller	FQDD
		Dell EMC Chassis Physical Disk Status	PhysicalDisk	FQDD
		Dell EMC Storage ME4 series Disk Group	VirtualDisk	FQDD
		Dell EMC Chassis PCIe Devices Status	PCIDevice	FQDD
		Dell EMC Chassis KVM Status	KVM	Name
	NGM	Dell EMC Chassis Traps	Trap	
		Dell EMC Chassis Information	System	
		Dell EMC Chassis Overall Health Status	Subsystem	
		Dell EMC Chassis Warranty Information	warranty	
		Dell EMC Chassis Fan Status	Fan	FQDD
		Dell EMC Chassis Power Supply Status	PowerSupply	FQDD
		Dell EMC Chassis I/O Module Status	IOModule	ServiceTag
		Dell EMC Chassis Server Slot Information	ComputeModule	ServiceTag
		Dell EMC Chassis Storage Slot Information	StorageModule	ServiceTag
		Dell EMC Chassis Management Module Status	CMC	
		Dell EMC Chassis Temperature Probe Status	TemperatureSensors	FQDD
Dell EMC Storage Dell EMC Networking	EqualLogic	Dell EMC Storage PS-Series Member Traps	Trap	
		Dell EMC Storage PS-Series Group Traps	TrapG	
		Dell EMC Storage PS-Series Group Information	System	
		Dell EMC Storage PS-Series Group Volume Status	Volume	Name
		Dell EMC Storage PS-Series Group Storage Pool Information	StoragePool	
		Dell EMC Storage PS-Series Member Physical Disk Status	PhysicalDisk	SerialNumber
		Dell EMC Storage PS-Series Member Warranty Information	warranty	

Host Group	Device Name	GUI Service Name	Component Name	Key attributes for excludeinstance
		Dell EMC Storage PS-Series Member Information	Member	
		Dell EMC Storage PS-Series Member Overall Health Status	Member	
	MDArray	Dell EMC Storage MD-Series Traps	Trap	
		Dell EMC Storage MD-Series Information	System	
		Dell EMC Storage MD-Series Warranty Information	warranty	
		Dell EMC Storage MD-Series Overall Health Status	System	
	ME4	Dell EMC Storage ME4 Overall Health Status	Subsystem	
		Dell EMC Storage ME4 Traps	Trap	
		Dell EMC Storage ME4 Information	System	
		Dell EMC Storage ME4 Volume Status	Volume	FQDD
		Dell EMC Storage ME4 Power Supply Status	PowerSupply	FQDD
		Dell EMC Storage ME4 Controller Status	Controller	FQDD
		Dell EMC Storage ME4 NIC Status	NIC	FQDD
		Dell EMC Storage ME4 Storage Enclosure Status	StorageEnclosure	FQDD
		Dell EMC Storage ME4 Physical Disk Status	Disk	FQDD
		Dell EMC Storage ME4 series Disk Group	Vdisks	SerialNumber
		Dell EMC Storage ME4 Storage Pool Status	StoragePool	SerialNumber
		Dell EMC Storage ME4 Fan Status	Fan	FQDD
		Dell EMC Storage ME4 I/O Module Status	IOM	SerialNumber
		Dell EMC Storage ME4 Warranty Information	warranty	
	Compellent	Dell EMC Storage SC-Series Management Traps	Trap	
		Dell EMC Storage SC-Series Controller Traps	TrapG	
		Dell EMC Storage SC-Series Information	System	
		Dell EMC Storage SC-Series Volume Status	Volume	VolumeName

Host Group	Device Name	GUI Service Name	Component Name	Key attributes for excludeinstance
		Dell EMC Storage SC-Series Physical Disk Status	Disk	Name
		Dell EMC Storage SC-Series Controller Information	Controller	
		Dell EMC Storage SC-Series Overall Health Status	System	
		Dell EMC Storage SC-Series Controller Warranty Information	warranty	
		Dell EMC Storage SC-Series Controller Overall Health Status	Controller	
Dell EMC Networking	F10	Dell EMC Network Switch Traps	Traps	
		Dell EMC Network Switch Information	System	
		Dell EMC Network Switch Overall Health Status	System	
		Dell EMC Network Switch PowerSupply Status	PowerSupply	Index
		Dell EMC Network Switch PowerSupplyTray Status	PowerSupplyTray	Index
		Dell EMC Network Switch FanTray Status	FanTray	TrayIndex
		Dell EMC Network Switch Fan Status	Fan	Index
		Dell EMC Network Switch Processor Status	Processor	Index
		Dell EMC Network Switch Warranty Information	warranty	
		Dell EMC Network Switch vFlash Status	Flash	
		Dell EMC Network Switch Physical Port Status	Port	Name
	Nseries	Dell EMC Network Switch Traps	Trap	
		Dell EMC Network Switch Information	System	
		Dell EMC Network Switch Overall Health Status	System	
		Dell EMC Network Switch PowerSupply Status	PowerSupply	Index
		Dell EMC Network Switch PowerSupplyTray Status	PowerSupplyTray	Index
		Dell EMC Network Switch FanTray Status	FanTray	TrayIndex
		Dell EMC Network Switch Fan Status	Fan	Index
		Dell EMC Network Switch Processor Status	Processor	Index
		Dell EMC Network Switch Warranty Information	warranty	

Host Group	Device Name	GUI Service Name	Component Name	Key attributes for excludeinstance
		Dell EMC Network Switch vFlash Status	Flash	
		Dell EMC Network Switch Physical Port Status	Port	Name

Component Services

To list added or to be added services for Host Level and Host Group Level

The following command lists all the component services that are discovered only:

- `--listservices`: Lists all the added or to be added services for monitoring

To list added or to be added component services for discovered host

Syntax: Following script/syntax helps user to see that the list of services that are added or to be added for host.

```
python dellemc_nagios_discovery_service_utility.py --host=<IP address/FQDN> --listservices  -
output.file=<host file location>
```

Example:

```
python dellemc_nagios_discovery_service_utility.py --host=100.28.45.36 --listservices -
output.file=/usr/local/nagios/dell/config/objects
```

NOTE: **If `output.file` option is not provided, it takes the value as "<NAGIOS_HOME>/dell/config/objects"**

To list added or to be added component services for Host Group

Syntax: Following script/syntax helps user to see that the list of services that are added or to be added for host group.

```
python dellemc_nagios_discovery_service_utility.py --hostgroup=<groupname> --listservices
```

Example:

```
python dellemc_nagios_discovery_service_utility.py --hostgroup="Dell EMC VxFlex" --
listservices
```

```
python dellemc_nagios_discovery_service_utility.py --hostgroup="Dell EMC Networking" --
listservices
```

```
python dellemc_nagios_discovery_service_utility.py --hostgroup="Dell EMC Chassis" --
listservices
```

Adding or removing component services

To add or remove services for Host Level and Host Group Level

The following command allows the user to add or remove component services at host and host group level:

- `-h`: To find the list of the options available.
- `--addservices`: To add services for monitoring at host or hostgroup level.
- `--removeservices`: To remove services from monitoring at host or host group level.
- `--hostgroup`: To add or remove services at the host group level.

NOTE: **--addservices and --removeservices option accepts predefined comma-separated values of services that are enclosed in double quotes.**

To add or remove component services for a discovered host

Syntax: The following script or syntax helps user to add and remove services that are discovered:

```
  python dellemc_nagios_discovery_service_utility.py --host=<IP address> --
addservices=<servicename> --removeservices=<servicename> -output.file=<host file location>
```

Example:

```
 python dellemc_nagios_discovery_service_utility.py --host=100.98.67.123 --
addservices="NIC,Disk,Controller" --removeservices="StorageEnclosure,VDisks"  -
output.file=/usr/local/nagios/dell/config/objects
```

To add or remove component services for all the hosts or devices that are discovered under given hostgroup

Syntax: Following scripts or syntax helps user to add and remove services under host group:

```
python dellemc_nagios_discovery_service_utility.py --host=<hostgroup> --
addservices=<servicename> --removeservices=<servicename> -output.file=<host file
```

Example:

```
python dellemc_nagios_discovery_service_utility.py --host="Dell EMC Networking" --
addservices="NIC,Disk,Controller" --removeservices="StorageEnclosure,VDisks" -
output.file=/usr/local/nagios/dell/config/objects
```

NOTE: If there is more than one service with the same component name, then adding and removing service removes all the repeated component names. Also, `--addservices` and `--removeservices` accepts only predefined component names. For more information, see GUI service name and component name

NOTE: If `output.file` option is not provided, it takes the value as "<NAGIOS_HOME>/dell/config/objects"

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 Dell EMC Servers, Dell EMC Storage devices and Dell EMC Network Switch. 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.
- WSMan is enabled and configured for discovering Dell EMC Servers using WSMan Protocol.
- Redfish is enabled and configured for discovering Dell EMC Servers using Redfish .

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: python `dellemc_nagios_discovery_service_utility.py`

   The script syntax and information on options are displayed. For more information see About Dell Discovery Utility.

   Based on your requirement do the following:

   - To discover a SNMP device using Host IP address :

     ```
     python dellemc_nagios_discovery_utility.py --host=<host name or IP address> --
     snmp.version=2 --output.file=/usr/local/nagios/dell/config/objects/
     ```

   - To discover through SNMP or WSMan Protocol/ Redfish REST API using Subnet mask :

     ```
     python dellemc_nagios_discovery_utility.py --subnet=<subnet with mask> --snmp.version=2
     --http.user=<username> --http.password=<password text> --output.file=/usr/local/nagios/
     dell/config/objects/
     ```

NOTE: If the other Dell EMC discovery utility parameters are not passed, the command will run with default values.

NOTE: Ensure that the Dell EMC device is discovered either using IP address or FQDN and not both at a given instance.

4. By default, Dell EMC Server is discovered using Redfish Protocol. If the WSMan protocol parameters are not passed in the command, the discovery will happen through SNMP. Based on your requirements, the value of `--prefProtocol` can be changed.

   Dell EMC Servers can be discovered through either WSMan or Redfish or SNMP using the below commands:

   - To discover using WSMan Protocol using File Path :

     ```
     python dellemc_nagios_discovery_utility.py --file=<absolute file path> --prefProtocol=2
     --http.user=root --http.password=calvin --output.file=/usr/local/nagios/dell/config/
     objects/
     ```

   - To discover using Redfish REST APIs using File Path:

     ```
     python dellemc_nagios_discovery_utility.py --file=<absolute file path> --prefProtocol=3
     --http.user=root --http.password=calvin --output.file=/usr/local/nagios/dell/config/
     objects/
     ```

   - To discover using SNMP using File Path:

     ```
     python dellemc_nagios_discovery_utility.py --file=<absolute file path> --prefProtocol=1
     --snmp.version=2 --output.file=/usr/local/nagios/dell/config/objects/
     ```

5. Once the discovery utility script is run, verify the Nagios configuration by running the command `<NAGIOS_HOME>/bin/nagios -v /<NAGIOS_HOME>/etc/nagios.cfg`.

   NOTE: If --enable.log parameter is not passed, the logs will not be created.

   NOTE: If the --enable.log parameter is passed, but the --logLoc value is not defined, the logs will be created in the default location <NAGIOS_HOME>/var/dell

6. Ensure that no errors are present and then restart Nagios Core by running the command `service nagios restart`.

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.

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 24. Device Information

Service	Status	Description	Attributes Displayed
Dell EMC Server Information	The following states are possible: • **OK**	This service provides the basic device inventory information. **NOTE: Chassis Tag is applicable only for modular servers and Node ID is applicable only for PowerEdge FM120x4** **NOTE: System Configuration Lockdown**	• Node ID • Chassis ServiceTag • Service Tag • Model • OS Name • OS Version • iDRAC URL • iDRAC Firmware Version • Service Host FQDN

Service	Status	Description	Attributes Displayed
		Mode, iDRAC Group Manager Status and iDRAC Group Name is applicable only for 14G Servers	• VMM URL • System Configuration Lockdown Mode • iDRAC Group Name • iDRAC Group Manager Status
Dell EMC Chassis Information	The following states are possible: • **OK**	This service provides the basic device inventory information for PowerEdge M1000e, PowerEdge MX7000, PowerEdge VRTX, PowerEdge VFlex and PowerEdge FX2/FX2s chassis.	• Service Tag • Chassis Name • Model Name • CMC Firmware Version • CMC URL
Dell EMC Storage SC-Series Controller Information	The following states are possible: • **OK**	This service provides the basic device inventory information for Compellent Controller IP	• Overall Controller • Service Tag • Primary Controller • Controller Name • Model Name • Compellent URL
Dell EMC Storage SC-Series Information	The following states are possible: • **OK**	This service provides the basic device inventory information for Compellent Management IP	• Overall Storage Center • Firmware Version • Compellent URL • Storage Name • Primary Controller name • Primary Controller Model • Primary Controller IP Address • Primary Controller Service Tag • Secondary Controller Name • Secondary Controller Model • Secondary Controller IP Address • Secondary Controller Service tag
Dell EMC Storage PS-Series Member Information	The following states are possible: • **OK**	This service provides the basic device inventory information for the EqualLogic Member.	• Overall Member • Member Name • Product Family • Service Tag • Model Name • Chassis Type • Disk Count • RAID Status • Firmware Version • RAID Policy • Group Name • Group IP • Storage Pool • Capacity(GB)
Dell EMC Storage PS-Series Group Information	The following states are possible: • **OK**	This service provides the basic device inventory information for EqualLogic Groups	• Group Name • Member Count • Volume Count • Group URL

Service	Status	Description	Attributes Displayed
Dell EMC Storage MD-Series Information	The following states are possible: • **OK**	This service provides the basic device inventory information for PowerVault MD-Series Storage Arrays	• Overall Storage Array • Service Tag • Product ID • Web URL • Storage Name
Dell EMC Storage ME4 Information	The following states are possible: • **OK**	This service provides the basic device inventory information for PowerVault ME4 Storage Arrays	• Overall Storage Array • Service Tag Product ID • World-wide ID • Storage Name
Dell EMC Network Switch Information	The following states are possible: • **OK**	This service provides the basic information of the Network Switch.	• HostName • Model • ServiceTag • Serial Number • MACAddress • ManagementIP • Firmware Version

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.

6

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

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.

Health Instances

You can monitor the health instances of all the Dell EMC devices using the Nagios Core Console. The health instances indicates the health status of the discovered Dell EMC device. The instances are shown under the **status information** tab.

By default the unhealthy instances are shown for the discovered devices in the Nagios core console. Based on the monitoring requirement, you can change the value of **--excludeinstance** in the host configuration file. Restart the **Nagios Service** after changing the values.

NOTE: To view all the instances of any service for the Dell EMC device in Nagios Core Console, navigate to `<NAGIOS_HOME>/dell/config/objects` and click on the `cfg` file of the discovered device. To see all the instances for the required service, remove the --excludeinstance="status=Ok" command from the check_command script.

NOTE: Health instances is not applicable for Information Services, Overall Health Services and Warranty Services of the discovered 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 25. Overall health Status information

Service	Status	Description	Attributes displayed when using WSMan	Attributes displayed when using SNMP	Attributes displayed when using Redfish/ REST
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 · Storage · Voltage · Power Supply · Amperage · Fan · Intrusion · Memory · Battery · CPU · Temperature	· Overall System · Storage · Voltage · Power Supply · Amperage · Fan · Intrusion · Memory · Battery · CPU · Temperature	· Overall System · Memory · CPU

Service	Status	Description	Attributes displayed when using WSMan	Attributes displayed when using SNMP	Attributes displayed when using Redfish/ REST
Dell EMC Chassis Overall Health Status **NOTE: ME4 and MX7000 uses REST protocol**		Provides global health status of Dell EMC Chassis.	Overall Chassis	Not Available	Overall Chassis
Dell EMC Storage PS-Series Member Overall Health		Provides global health status of EqualLogic Storage Arrays.	Not Available	Overall Member	Not Available
Dell EMC Storage SC-Series Overall Health Status		Provides global health status of Compellent Storage Arrays.	Not Available	Overall Storage Center	Not Available
Dell EMC Storage SC-Series Controller Overall Health Status		Provides global health status of Compellent Storage Array's controller.	Not Available	Overall Controller	Not Available
Dell EMC Storage MD-Series Overall Health Status		Provides global health status of PowerVault MD Storage Arrays.	Not Available	Overall Storage Array	Not Available
Dell EMC PowerVolt ME4-Series Overall Health Status		Provides global health status of PowerVault ME4 Storage Arrays.	NA	NA	Overall ME4
Dell EMC Network Switch Overall Health Status		Provides global health status of Dell EMC Network Switch	Not Available	Overall Switch	Not Available

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 26. Dell EMC device component health information

Service	Status	Description	Attributes Displayed when using WSMan	Attributes Displayed when using SNMP	Attributes displayed when using Redfish
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 · Type · PartNumber · Size · State · Speed	· Status · FQDD · Type · PartNumber · Size · State · Speed	· Status · FQDD · Type · PartNumber · Size · State · Speed · Memory Technology
Dell EMC Server Physical Disk Status		Provides the worst case aggregate health status of the physical disks in Dell EMC Servers.	· Status · ProductID · SerialNumber · Size · MediaType · Revision · State	· Status · FQDD · ProductID · SerialNumber · Size · MediaType · Revision · State	· Status · ProductID · SerialNumber · Size · MediaType · Revision · State
Dell EMC Server Disk group Status		Provides the worst case aggregate health status of the Disk Group s in Dell EMC servers.	· Status · FQDD · Layout · Size · MediaType · ReadCachePolicy · WriteCachePolicy · StripeSize · State	· Status · FQDD · Layout · Size · MediaType · ReadCachePolicy · WriteCachePolicy · StripeSize · State	· Status · FQDD · Layout · Size · MediaType · ReadCachePolicy · WriteCachePolicy · StripeSize · State · RaidStatus
Dell EMC Server Fan Status		Provides overall health status of the fans in Dell EMC servers.	· Status · FQDD · State	· Status · FQDD · State	· Status · FQDD · State
Dell EMC Server Network Device Status		Provides overall health status of	· ConnectionStatus · FQDD	· ConnectionStatus · FQDD	· ConnectionStatus

Service	Status	Description	Attributes Displayed when using WSMan	Attributes Displayed when using SNMP	Attributes displayed when using Redfish
		the NIC in Dell EMC servers.	• LinkSpeed • FirmwareVersion • ProductName	• LinkSpeed • FirmwareVersion • ProductName	• FQDD • LinkSpeed • FirmwareVersion • ProductName **NOTE: FirmwareVersion and ProductName attributes will display as Not Available.**
Dell EMC Server Intrusion Status		Provides overall health status of the chassis intrusion in Dell EMC servers.	• Status • Location • State	• Status • Location • State	Not Available
Dell EMC Server CPU Status		Provides overall health status of the CPUs in Dell EMC servers.	• Status • FQDD • Model • CoreCount	• Status • FQDD • Model • CoreCount	• Status • FQDD • Model • CoreCount
Dell EMC Server Power Supply Status		Provides overall health status of the power supply in Dell EMC servers.	• Status • FQDD • FirmwareVersion • InputWattage • Redundancy	• Status • FQDD • FirmwareVersion • InputWattage • Redundancy	• Status • FQDD • FirmwareVersion • InputWattage • Redundancy **NOTE: Redundancy and InputWattage attributes will display as Not Available.**
Dell EMC Server Temperature Probe Status		Provides overall health status of the temperature probe in Dell EMC servers.	• Status • Location • State	• Status • Location • State	• Status • Location • State
Dell EMC Server Voltage Probe Status		Provides overall health status of the voltage probe in Dell EMC servers.	• Status • Location • State	• Status • Location • State	• Status • Location • State
Dell EMC Server Controller Status		Provides the worst case aggregate health status of the storage controllers in Dell EMC servers.	• Status • FQDD • CacheSize • FirmwareVersion • Name	• Status • FQDD • CacheSize • FirmwareVersion • Name	• Status • FQDD • CacheSize • FirmwareVersion • Name

Service	Status	Description	Attributes Displayed when using WSMan	Attributes Displayed when using SNMP	Attributes displayed when using Redfish
Dell EMC Server Amperage Probe Status		Provides overall health status of the amperage probe in Dell EMC servers.	· Status · Location · State	· Status · Location · State	Not Available
Dell EMC Server SD Card Status		Provides overall health status of the SD card in Dell EMC servers.	· Status · FQDD · Size · WriteProtected · InitializedState · State	Not Available	· Status · FQDD · Size · WriteProtected · InitializedState · VFlashEnabledState
Dell EMC Server FC NIC Status		Provides overall health status of the FC NIC in Dell EMC servers.	· ConnectionStatus · FQDD · Name · FirmwareVersion · LinkSpeed	Not Available	· ConnectionStatus · FQDD · Name · FirmwareVersion · LinkSpeed
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	· ServiceTag · Service Level Details · Item number · Device Type · Ship Date(UTC) · Start Date(UTC) · End Date(UTC) · Days Remaining
Dell EMC Server GPU Status		Provides GPU information status for the Dell EMC servers.	NA	NA	· Status · FQDD · FirmwareVersion · Manufacturer · DataBusWidth · MarketingName · SlotType · GPUState

Table 27. Dell EMC Chassis component health information

Service	Status	Description	Attributes Displayed
Dell EMC Chassis Physical Disk Status Applicable only to PowerEdge VRTX chassis and PowerEdge MX7000 modular 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 · Model · PartNumber · Slot · FirmwareVersion · Capacity · FreeSpace · MediaType · SecurityState

Service	Status	Description	Attributes Displayed
Dell EMC Chassis Disk group status Applicable only to PowerEdge VRTX chassis and PowerEdge MX7000 modular chassis.		Provides the worst case aggregate health status of the Disk Group s in Dell EMC Chassis.	• Status • FQDD • BusProtocol • Capacity • 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	• Status • FQDD • Name • Fabric • PCIeSlot • PowerState • AssignedSlot • AssignedBlade
Dell EMC Chassis Fan Status PowerEdge MX7000 modular chassis.		Provides the worst case aggregate health status of the fans in Dell EMC Chassis.	• Status • FQDD • Name • Slot • Speed
Dell EMC Chassis Power Supply Status PowerEdge MX7000 modular chassis.		Provides the worst case aggregate health status of the power supply in Dell EMC Chassis.	• Status • FQDD • Name • PartNumber • Slot
Dell EMC Chassis Controller Status Applicable only to PowerEdge VRTX chassis. and PowerEdge MX7000 modular chassis.		Provides the worst case aggregate health status of the storage controllers in Dell EMC Chassis.	• Status • FQDD • CacheSize • 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 PowerEdge MX7000 modular chassis.		Provides the worst case aggregate health status of the IO module in Dell EMC Chassis.	• Status • FQDD • FabricType • IPv4Address • LaunchURL • Name • PartNumber

Service	Status	Description	Attributes Displayed
			• Slot
Dell EMC Chassis Server Slot Information		Provides the worst case aggregate health status of the Server slot in Dell EMC Chassis.	• Status • SlotNumber • HostName • Model • ServiceTag • iDRACIP
Dell EMC Chassis Storage Slot Information		Provides the worst case aggregate health status of the Storage slot in Dell EMC Chassis.	• Status • SlotNumber • Model • ServiceTag
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) • Days Remaining
Dell EMC NIC PowerEdge MX7000 modular chassis.		Provides information on NIC.	
Dell EMC Storage pool PowerEdge MX7000 modular chassis.		Provides information on storage pool	
Dell EMC Storage enclosure PowerEdge MX7000 modular chassis.		Provides information on storage enclosure	
Dell EMC Storage Volume		Provides volume information for storage	

Table 28. EqualLogic component health information

Service	Status	Description	Attributes Displayed
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
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)

Service	Status	Description	Attributes Displayed
			• 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 29. Compellent component health information

Service	Status	Description	Attributes Displayed
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 • TotalSize • BusType • DiskEnclosureNumber
Dell EMC Storage SC-Series Volume Status		Provides the worst case aggregate health status of the Compellent volume.	• Status • VolumeName
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 30. PowerVault MD warranty information

Service	Status	Description	Attributes Displayed
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

Table 31. PowerVault ME4services information

Service	Status	Description	Attributes Displayed
Dell EMC Storage ME4 Warranty Information	The following states are possible:	Provides warranty information status for the PowerVault ME4 storage arrays.	• ServiceTag • Service Level Details

Service	Status	Description	Attributes Displayed
	• **OK** • **Warning** • **Unknown** • **Critical**		• Item number • Device Type • Ship Date(UTC) • Start Date(UTC) • End Date(UTC) • Days Remaining
Dell EMC Storage ME4 Controller		Provides storage controller information for the PowerVault ME4 storage arrays.	• Controller Service • StorageControllerCodeVersion • HardwareVersion ManufacturingDate
Dell EMC Storage ME4 Fans		Provides storage fan information for the PowerVault ME4 storage arrays.	
Dell EMC Storage ME4 IO Module		Provides storage IO module information for the PowerVault ME4 storage arrays.	• Status • Description • SerialNumber • ID
Dell EMC Storage ME4 NIC	**OK**	Provides storage NIC information for the PowerVault ME4 storage arrays.	• Status • FQDD • Name • Speed
Dell EMC Storage ME4 Physical Disk		Provides storage physical disk information for the PowerVault ME4 storage arrays.	• Manufacturer • Revision • Description • Usage • Location
Dell EMC Storage ME4 Disk Group		Provides storage Disk Group information for the PowerVault ME4 storage arrays.	• Size
Dell EMC Storage ME4 Power Supply Status		Provides storage power supply status for the PowerVault ME4 storage arrays.	• Status • FQDD • SerialNumber • PartNumber • System Name
Dell EMC Storage ME4 Storage Pool Status		Provides storage pools information for the PowerVault ME4 storage arrays.	• PoolOverCommitted • SectorFormat • Overcommit • HighThreshold • MidThreshold • Size
Dell EMC Storage ME4 Storage Enclosure Status		Provides storage enclosure information for the PowerVault ME4 storage arrays.	• Status • FQDD • System Name • SerialNumber • PartNumber

Service	Status	Description	Attributes Displayed
Dell EMC Storage ME4 Volume Status		Provides storage volume information for the PowerVault ME4 storage arrays.	• View • Manufacturingdate • Name

Table 32. Network Switch component health information

Service		Description	Attributes Displayed when using SNMP
Dell EMC Network Switch Fan Status	The following states are possible: • **OK** • **Warning** • **Unknown** • **Critical**	Provides the worst case aggregate Fan status of the Network Switch.	• Status • Index • Description
Dell EMC Network Switch FanTray Status		Provides the worst case aggregate FanTray status of the Network Switch.	• Status • Type • TrayIndex
Dell EMC Network Switch PowerSupply Status		Provides the worst case aggregate PowerSupply status of the Network Switch.	• Status • Index • Description • Source
Dell EMC Network Switch PowerSupplyTray Status		Provides the worst case aggregate PowerSupplyTray status of the Network Switch.	• Index • Type
Dell EMC Network Switch Processor		Provides overall health status of the processors in Dell EMC Network Switch.	• ProcessorMemSize • ProcessorModule • Index
Dell EMC Network Switch vFlash Status		Provides the worst case aggregate health status of the Network Switch.	• MountPoint • Size • Name
Dell EMC Network Switch Physical Port Status		Provides the worst case aggregate health status of the physical ports in Dell EMC Network Switch.	• Status **NOTE: The Status attribute displays the health status of the Admin Status.** • Type • Name
Dell EMC Network Switch Warranty Information		Provides warranty information status for the Dell EMC Network Switch	• ServiceTag • Service Level Details • Item Number • Device Type • Ship Date • Start Date • End Date • 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 PowerEdge VRTX Chassis console or the PoweEdge VRTX chassis User's Guide at Dell.com/support.

NOTE:

Table 33. 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.

Excluding instances

The script to exclude component instances for all the services:

```
 python dellemc_nagios_discovery_service_utility.py --host="IP address" --
service="Servicename" --excludeinstance="<AttributeName> operator <AttributeValue>" -
output.file=<host file location>
```

When the discovery utility script is run with valid arguments, it should exclude the instances of the components. Following are the arguments provided:

1. --host: hostname or IP of the device
2. --services: Name of the component for which instances are excluded
3. --excludeinstance: A condition with IN or "==" operator to exclude instance

Excluding multiple instances

To exclude multiple instances, use "IN" operator with "()" For example,

```
python dellemc_nagios_discovery_service_utility.py --host="100.96.25.86" --service="NIC" -
excludeinstance="FQDD IN ('NIC.Integrated.1-3-1','NIC.Integrated.1-4-1')" -output.file=/usr/
local/nagios/dell/config/objects
```

NOTE: "IN" operator is not case-sensitive.

Excluding single instance

To exclude single instances, use "==" operator. For example,

```
python dellemc_nagios_discovery_service_utility.py --host="100.96.25.86" --service="NIC" -
excludeinstance="FQDD == 'NIC.Integrated.1-3-1'" -output.file=/usr/local/nagios/dell/config/
objects
```

NOTE: If `output.file` option is not provided, it takes the value as "<NAGIOS_HOME>/dell/config/objects"

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.

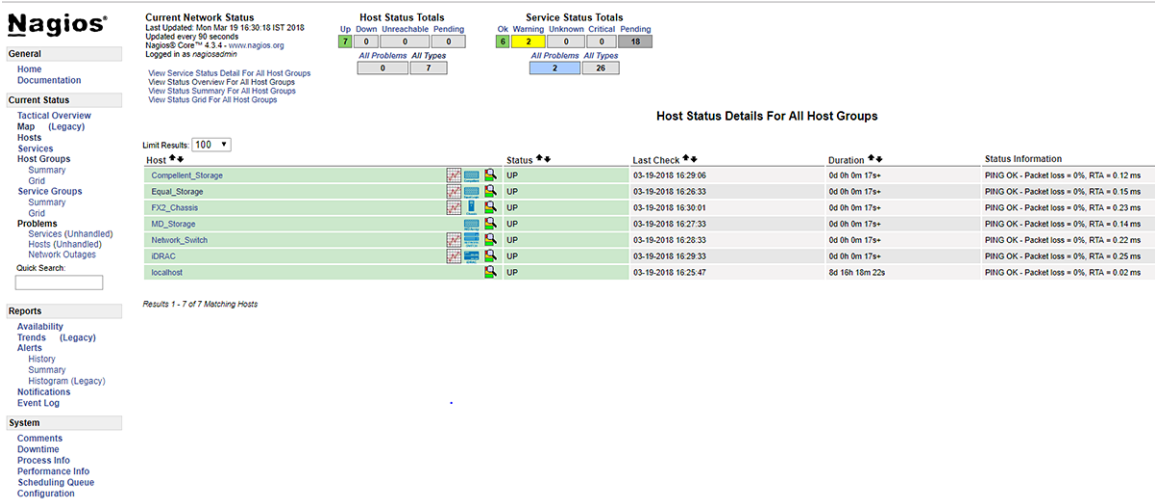
Health monitoring of Dell EMC devices is performed through iDRAC with LC and corresponding details are shown in their respective component health service with proper severity health color.

Viewing Dell EMC devices in the Nagios Core console

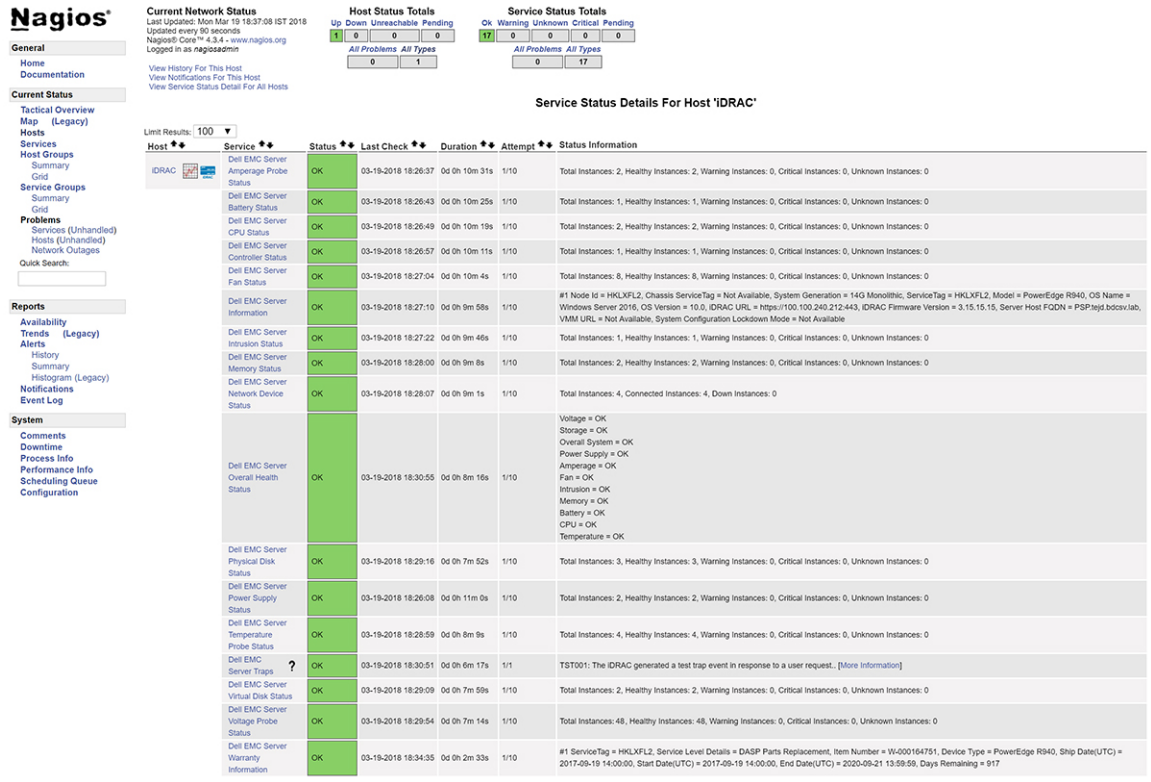
To view the Dell EMC devices in the Nagios Core console, ensure that the devices are already discovered and inventoried.

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.



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 34. Dell EMC trap information

Service	Status	Description
Dell EMC Server Traps	The following states are possible: · **OK** · **Warning** · **Critical** · **Unknown**	Provides trap Information of the Dell EMC Server raised through agent-free method.
Dell EMC Chassis Traps	The following states are possible: · **OK** · **Warning** · **Critical** · **Unknown**	Provides trap Information of the MX7000, M1000e, VRTX, and FX2/FX2s Chassis.
Dell EMC Storage PS-Series Member Traps	The following states are possible: · **OK** · **Warning** · **Critical** · **Unknown**	Provides trap Information of the EqualLogic PS-Series storage Arrays.
Dell EMC Storage PS-Series Group Traps	The following states are possible: · **OK** · **Warning** · **Critical** · **Unknown**	Provides trap Information of the EqualLogic PS-Series storage Arrays.
Dell EMC Storage SC-Series Management Traps	The following states are possible: · **OK** · **Warning** · **Critical** · **Unknown**	Provides trap information of the Compellent SC-Series storage Arrays
Dell EMC Storage SC-Series Controller Traps	The following states are possible: · **OK** · **Warning** · **Critical** · **Unknown**	Provides trap Information of the Compellent SC-Series storage Arrays.
Dell EMC Storage MD-Series Traps	The following states are possible: · **OK** · **Warning** · **Critical** · **Unknown**	Provides trap Information of the PowerVault MD-Series storage arrays.
Dell EMC Storage ME4 Traps	The following states are possible: · **OK**	Provides trap Information of the PowerVault ME4 storage arrays.

Service	Status	Description
	• **Warning** • **Critical** • **Unknown**	
Dell EMC Network Switch Traps	The following states are possible: • **OK** • **Warning** • **Critical** • **Unknown**	Provides trap Information of the Dell EMC Network Switch.

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**.

7

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.

Topics:

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 35. 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 MX7000	**OpenManage Enterprise Modular Console**
PowerVault ME4 Storage Arrays	**ME Storage Manager Console**
PowerEdge VRTX Chassis	**Chassis Management Controller Console**
PowerEdge FX2/FX2s Chassis	**Chassis Management Controller Console**
Dell Compellent SC-Series Storage Arrays	**Enterprise Manager Client for managing Compellent devices**
EqualLogic PS-Series Storage Arrays	**EqualLogic Group Manager Console**
Dell EMC Network Switch	**Dell EMC Network Switch Console**

NOTE: Dell EMC Network Switch Console launch is not applicable for S, Z, and C Series Switches.

NOTE: If the HCI devices are added to the cluster, by default VMM console launches. Else iDRAC console is launched.

8

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 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 is displayed in the 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.

Configuring the Dell EMC warranty information parameters

You can configure the warranty related parameters manually. By default, for all the discovered Dell EMC devices, the value of Warranty Critical Days will be 10 and Warranty Warning Days will be 30.

If you wish to change the values of Warranty Critical Days and Warranty Warning Days, navigate to **<NAGIOS_HOME>/dell/config/objects** and open the Host Configuration File of the discovered Dell EMC device. You can now change the values of `--warranty.critical` and `--warranty.warning` parameters under the **Warranty Services**.

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.

Topics:

- Viewing warranty information

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.
- 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.

9

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`.

10

Knowledge Base 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 that is 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 **Services** under **Current Status**.
3. Go 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 are 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 cannot find the KB messages for any of the generated alerts by the process described above, go to dell.com/support and search for the KB messages using the event ID or KB message as generated by the Dell EMC device.

If unable find KB messages for Server(iDRAC)/CMC and NGM

1. **Go to *qrl.dell.com* .**
2. **Go to Look up > Error code.**
3. **Enter the error code and click Look it up.**

See ME4 User Guide section at Events and event messages for more information on events.

NOTE: KB information is not available for Dell EMC SC-Series Storage Arrays, Dell EMC MD-Series Storage Arrays and Dell EMC Network Switches.

11

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.

Nagios console displays "Error:<protocol>: No response from Host: IP/hostname" on modifying passphrasee

Resolution: If passphrase is changed, users needs to rediscover the devices.

Nagios Discovery script shows "Error: Empty or invalid passphrase is configured"

Resolution: Configure the passphrase as defined in the post installation requirements as it cannot be empty passphrase text and should be minimum of 10 characters and maximum of 25 characters.

NOTE: Having empty passphrase text would affect the device check (monitoring) as well

Nagios Discovery script shows "Error: Macro $OMINAGIOSRESPATH$ has invalid path or file not found"

Resolution: resource.cfg in the location <NAGIOS_HOME> etc has a macro $OMINAGIOSRESPATH$ that has invalid path. Update the macro with correct path to file having the passphrase.

Nagios Discovery script shows "Error: Path not configured for the macro $OMINAGIOSRESPATH $ in resource.cfg file "

Resolution: resource.cfg in the location <NAGIOS_HOME>etc has a macro $OMINAGIOSRESPATH$ but value is not provided, update the macro with the filepath having passphrase for encryption and decryption

All Instances are not showing under service when the value for the respective instances attribute is empty, and the script is run as [- -

excludeinstance="<AttributeName> operator '<empty>'"]

Resolution: To show these instances, script is run with value for the <AttributeName> other than <empty> For example : [- -excludeinstance="<AttributeName> operator 'NA'"]

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.

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

1. OMSDK is installed.
2. The IP addresses or hosts are reachable.
3. SNMP or WSMan or Redfish is enabled on the given IP addresses or hosts.
4. The appropriate protocol parameters are passed during discovery.

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 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 trap
   ```

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 IP addresses or hosts provided are reachable.
2. SNMP is enabled on the IP addresses or hosts.

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

1. Redfish is enabled on the IP addresses or Hosts.
2. The IP addresses or hosts provided are reachable.

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 host config file available at `<NAGIOS_HOME>/dell/config/objects`.

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 trap`
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 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 SNMPT process has appropriate permissions to run scripts in `<NAGIOS_HOME>/dell/scripts`.

OMSDK installation may fail with pip version 10.0 and above

Resolution: Follow any one of the below step:

1. Downgrade pip version to lower than 10.0 and then install omsdk
2. To Force install omsdk using: pip install --ignore-installed omsdk-1.2.387-py2.py3-none-any.whl

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
```

12

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.

A

Appendix

Configuring SNMP parameters for iDRAC using the iDRAC web console

1. Launch the iDRAC (12th and 13th generation of PowerEdge servers) web console and navigate to **iDRAC Settings** > **Network** > **Services** in the console.

   For 14th generation of PowerEdge servers Launch the iDRAC web console and navigate to **iDRAC Settings** > **Services**
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.

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

Configuring SNMP trap destination address for iDRAC using iDRAC web console

For 12th and 13th Generation of PowerEdge servers.

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**.

For 14th Generation of PowerEdge servers.

1. Log in to iDRAC.
2. Select **Configuration** > **System Settings**.
3. You can perform the following actions:
   - In the **Alert Configuration** section, enable **Alerts** .
   - In the **Alerts and Remote System Log Configuration** section, select the required fields thereby configuring the SNMP alerts.
4. Click on the**SMTP(E-mai) Configuration** tab and then perform the following actions:
   - In the **Destination Email Address** 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** under the **SNMP Traps Configuration** section as required and then click **Apply**.
   - In the **SNMP Traps Configuration** section, select the required SNMP trap format and then click **Apply**.